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OF

THE PROCEEDINGS

OF

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FOR THE YEARS 1887-1889.

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CONTENTS.

PAG

Lists of Officers and Committees for the Years 1887–89, . . 5–7

List of Resident Members, ... 8

List of Honorary Members, ... 10

List of Corresponding Members, ... 10

List of Donors to Cabinet, ... 12

List of Donors to Library, ... 13

American Aboriginal Poetry. Dr. Daniel G. Brinton, . . 17

Notes on Early Medals, Rings, etc., found in Onondaga and Cayuga Counties, N. Y. Rev. Dr. W. M. Beauchamp, . 40

Migrations of the Onondagas. Rev. Dr. W. M. Beauchamp, . 49

The I Hing, or "Patriotric Rising," a Secret Society among the Chinese in America. Stewart Culin, ... 51

An Old Japanese Standard Foot Measure. Benjamin Smith Lyman, ... 68

Aboriginal Wood Working. Francis Jordan, Jr., ... 76

On the "Stone of the Giants." Dr. Daniel G. Brinton, . . 78

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Sotomayor, Rev. Damaso, Mexico.
Storer, Dr. Horatio R., Newport, R. I.

Tiesenhausen, W. von, St. Petersburg, Russia.
Thieme, C. G., Leipzig, Germany.
Thomas, Thomas H., Cardiff, Wales.
Thurston, G. P., Nashville, Tenn.
Trübner, Messrs. & Co., London, England.

Williams, J. Fletcher, St. Paul, Minn.

(II) SOCIETIES AND INSTITUTIONS.

IN THE UNITED STATES.

California Historical Society, Berkeley, Cal.
University of California, Berkeley, Cal.
New Haven Colony Historical Society, New Haven, Conn.
Historical Society of Delaware, Wilmington.
Bureau of Ethnology, Washington, D. C.
Bureau of Education, Washington, D. C.
Department of State, Washington, D. C.
Smithsonian Institution, Washington, D. C.
Anthropological Society, Washington, D. C.
Georgia Historical Society, Savannah, Ga.
Davenport Academy of Natural Sciences, Davenport, Iowa.
Kansas Academy of Science, Kansas.
Kansas State Historical Society, Topeka, Ks.
Bangor Historical Society, Bangor, Me.
General Conference of Maine, Bangor, Me.
Maryland Historical Society, Baltimore, Md.
Archæological Institute of America, Boston, Mass.
Bostonian Society, Boston, Mass.
Museum of the Fine Arts, Boston, Mass.
New England Historic-Genealogical Society, Boston, Mass.
Peabody Museum of American Archæology and Ethnology, Cambridge, Mass.
Essex Institute, Salem, Mass.
Minnesota Historical Society, St. Paul, Minn.
Missouri Historical Society, St. Louis, Mo.
St. Louis Academy of Sciences, St. Louis, Mo
Nebraska State Historical Society, Lincoln, Neb.
New Jersey Historical Society, Newark, N. J.
New York State Library, Albany, N. Y.
Cayuga Co. Historical Society, Auburn, N. Y.
Long Island Historical Society, Brooklyn, N. Y.
Buffalo Historical Society, Buffalo, N. Y.
American Numismatic and Archæological Society, New York, N. Y.
New York Academy of Anthropology, New York, N. Y.
Oneida Historical Society, Utica, N. Y.
Western Reserve and Northern Ohio Historical Society, Cleveland, Ohio.
American Philosophical Society, Philadelphia, Pa.
Fairmount Park Art Association, Philadelphia, Pa.
Pennsylvania Museum and School of Industrial Art, Philadelphia, Pa.
Library Company of Philadelphia, Philadelphia, Pa.
Wagner Free Institute of Science, Philadelphia, Pa.
Yearly Meeting of Friends, Philadelphia, Pa.
Wyoming Historical and Geological Society, Wilkesbarre, Pa.
Newport Historical Society, Newport, R. I.
Rhode Island Historical Society, Providence, R. I.
Tennessee Historical Society, Nashville, Tenn.
Vermont Historical Society, Montpelier, Vt.
Virginia Historical Society, Richmond, Va.
State Historical Society of Wisconsin, Madison, Wis.

IN FOREIGN COUNTRIES.

Institut Égyptien, Cairo, Egypt.
Numismatic and Antiquarian Society, Montreal, Canada.
Institut Canadien Francaise, Ottawa, Canada.
Literary and Historical Society of Quebec, Quebec, Canada.
Manitoba Historical and Scientific Society, Winnipeg, Canada.
El Museo Nacional Mexico, Mexico.
China Branch of the Royal Asiatic Society, Shanghai, China.
Asiatic Society of Japan, Tokio, Japan.
Bataviaasche Genootschap van Kunsten en Wetenschappen, Batavia, Java.
K. K. Naturhistorisches Hof-Museum, Vienna, Austria.

Numismatische Gesellschaft, Vienna, Austria.

Cercle Archéologique, Mons, Belgium.

Société des Sciences, des Arts et des Letters du Hainaut, Mons, Belgium.

Musée Guimet, Paris, France.

Sociéte d' Anthropologie, Paris, France.

Société d' Ethnographie, Paris, France.

Société d' Émulation des Côtes-du-Nord, Saint-Brieuc, France.

Numismatische Gesellschaft, Berlin, Germany.

Alterthums-Verein, München, Germany.

Cambridge Antiquarian Society, Cambridge, England.

Numismatic Society, London, England.

Royal Historical and Archæological Association of Ireland, Kilkenny, Ireland.

Archæological Society, Glasgow, Scotland.

Philosophical Society, Glasgow, Scotland.

Islenzka Fornleifarfjèlag, Reykjavik, Iceland.

R. Accademia di Scienze, e Lettere e Belle Arti, Palermo, Italy.

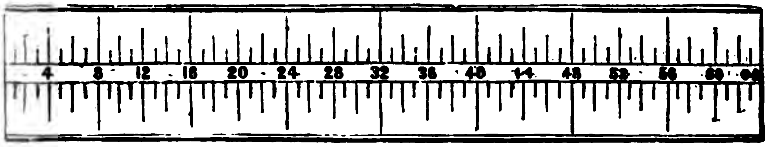
R. Accademia dei Lincei, Rome, Italy.

Société Finno-Ougrienne, Helsingfors, Finland.

Moscow Archæological Society, Moscow, Russia.

Imperial Russian Archæological Society, St. Petersburg, Russia.

Kongl. Vitterhets Historie och Antiquitets Akademien, Stockholm, Sweden.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1887.

JANUARY 7TH.

President Brinton read his annual address which was entitled

AMERICAN ABORIGINAL POETRY.

In our modern civilization we are apt to consider that a taste for poetry is a mark of high culture, something which belongs exclusively to trained mental fibre and educated perceptions. It causes us, therefore, some surprise when we study the psychology of savage tribes, to find them almost everywhere passionate lovers of verse and measure, of music and song. This fact, well established by the researches of ethnology, was recognized by more than one keen thinker before ethnology was born. In the last century that erratic genius, Hamann, known in German literature as "the magician of the north," penned the memorable words, "Poetry is the common mother tongue of the human race," and insisted that to attain its noblest flights, "we must return to the infancy of the race, and to the simplicity of a childlike faith," a dictum warmly espoused by the philosophic Herder and by the enthusiasm of the young Goethe. Later on, that profoundest of psychologists, Wilhelm von Humboldt, reflecting on the problems presented by the origin of languages, expressed his conviction that man as a zoological species is a singing animal, like many birds; that his vocal organs turn to song as their appropriate function with a like spontaneity as his mind turns to thought or his eyes to the light.

It was under the inspiration of these sentiments that the collections of folk-songs, *Volkslieder*, were commenced, which have so fruitfully enriched our modern literature, though not in the manner anticipated by Hamann and Herder. Their value is everywhere recognized as illustrations of literary history and of national psychology. At times they throw interesting sidelights on local history, and preserve valued fragments of mythology and of early linguistic forms. For some years

I have made it one of the aims of my researches into the ethnology of the native tribes of America to gather from all directions copies of authentic aboriginal songs, no matter how crude or apparently meaningless. My purpose is to print the original texts with literal translations and grammatical explanations, to study them in the light cast by the history of poetry in general, and finally to analyze them as illustrations of tribal and racial psychology. This evening I would lay before you merely a general sketch of the subject, selecting a few of the points which appeal to all who care to contemplate the development of the human faculties.

When I speak of the poetry of savage tribes, you must not understand the term in its newspaper sense of a composition where each line begins with a capital letter, and which appeals to the ear with some sort of verbal jingle. Rhyme, you are aware, is a modern invention. It was unknown to the classic poets or to the old Teutonic bards. The former rested their poetic cadence on the quantity of their vowels, the latter on alliteration and similar devices. The Spanish poets of to-day depend less on rhyme than on a delicate vocalic assonance, which a foreign ear but imperfectly appreciates.

If we inquire into the psychological principle which makes rhyme agreeable to the ear, we shall find that this principle is that of *repetition.* I could carry the analysis still further, and demonstrate to you that the physiological principle of all pleasure is expressed in the formula—maximum action with minimum effort—and that the nerves of audition are most successfully acted upon in accordance with this law by limited repetitions with harmonious intervals. All metres, all rhythm, all forms of alliteration and assonance are but varied applications of the principle of harmonious repetition; and the poet, as a poet, as an artist, must be rated and practically always is rated, by the skill with which he employs the resources of repetition. Lofty thoughts, beautiful metaphors, delicate allusions, these are his extraneous aids, and by no means his exclusive property; but the form is his own, be it quantity, rhyme, alliteration or accent.

I have felt it necessary to state very briefly these general principles in order to place in its proper light that form of poetry which is most prevalent among the native tribes of America. You will not find among them any developed examples of either rhyme or alliteration; their dialects do not admit of fixed vocalic quantity, like the Latin; even accent and assonance, which are the more imperfect resources of the poetic art, are generally absent. What then, in a literary analysis, constitutes their poetic form?

I answer, repetition in its simplest expressions. These are two. The same verse may be repeated over and over again; or the wording of the verses may be changed, but each may be accompanied by a burden of refrain, which is repeated by the singer or the chorus. These are the two fundamental characteristics of aboriginal poetry, and are found everywhere on the American continent. The refrain is usually interjectional and wholly meaningless; and the verses are often repeated without alteration, four or five times over.

These were the simple resources of the native bards. They had one other. In every American language which I have examined for this purpose I have found the existence of a poetic dialect, of a form of speech markedly distinct from that of ordinary life, a phraseology consecrated to the inspiration of the Divine afflatus; as the noble old poet, Spenser, expressed it, "A ledden of the gods." In this, and this alone, did the native poets pour forth their wild chants.

These, I say, were their simple resources. Do not look upon them with contempt. At no time has poetry felt that it could dispense with them. This I might prove to you by quoting some of the meaningless refrains and repetitions in the popular songs of to-day; but I seek nobler examples, and from the loftier flight of this divine art. I name you three of the most wonderfully gifted poets of this century, in whose works you will find abundant and beautiful illustrations of all these poetic artifices; they are, the American, Edgar Allen Poe; the Englishman, Alfred Tennyson; and the Irishman, Clarence Mangan. Perhaps you will indulge me while I quote one verse from the last named, to illustrate the power which he draws from the refrain; it is from his poem entitled "The Karamanian Exile."

I see thee ever in my dreams,
Karaman!
Thy hundred hills, thy thousand streams,
Karaman! O Karaman!
As when thy gold-bright morning gleams,
As when the deepening sunset seams
With lines of light thy hills and streams,
Karaman!
So thou loomest on my dreams,
Karaman! O Karaman!

Thus we find that the very highest forms of true poetry retain those traits, those devices of form, with which its earliest and rudest efforts began.

Perhaps you will take a less favorable view of my thesis when I tell you that a great many American songs are wholly without intelligible meaning; both verse and refrain are merely interjectional; they are sound and fury, signifying nothing. Such are the war-songs of the Iroquois and many others which I could name. But in defence of these I would ask you to remember that they are *sung*, not written to be read, and they must be judged by the laws of vocal music. I have heard persons of good judgment say that they enjoyed hearing a singer in a foreign tongue which they did not understand, more than in their own, as the sweetness of the tones were not marred by the interposition of thoughts; and after all, if we look upon poetry proper as form only, as undoubtedly it is, do we not drink in its purest essence when that form is presented to us absolutely without material contents? These broken syllables, these choked utterances, these inarticulate cries, are the emotional outbursts of sentiment and passion, the oldest, the most heartfelt, the universal, the most untutored language of human feeling, the spontaneous revelations of that common nature which makes the whole world kin.

You will naturally inquire concerning the specimens which I present to you how closely they represent the workings of the aboriginal mind. In answer I would say that I have taken pains to select those which are the spontaneous products of the native muse, uninfluenced by European suggestions; I have every one of them in the original tongue, and the translations I offer have been made by competent students of the several tongues, and are as close to the original as it is practicable to make them in order to convey the idea they contain with reasonable deference to the laws of English grammar. To render such translations complete they should be presented in three forms, first, a literal, verbal rendering, like an interlinear translation; secondly, a prose version presenting the metaphors and ideas of the poet in fluent English; and thirdly, a metrical version, imitating in English verse the poetical sentiment and verbal harmony of the original. I shall generally give you the second of these only, as that most appropriate for an occasion like the present.

We may, if we choose, begin our survey of the continent with its extreme northernmost inhabitants, the Eskimo, whose abode is along the inhospitable shores of the Arctic sea. One might think that the eternal snows which surround them, the vast glaciers which chill the air for miles beyond their limits, would also freeze out and kill all fire of poesy. Quite the contrary. I doubt if throughout the American continent I could quote you a more thoroughly poetic people, one taking greater delight in song, than these same boreal, blubber-eating, ice-bound Eskimo. Their great delight is in long tales of magic and adventure, and in improvisation. An Eskimo hunter, with a ready power to string together verse after verse of their peculiar poetry, soon extends his fame beyond the confines of his native village, and becomes known for many a league up and down the shore. Often in the long winter nights, genuine tourneys of song are organized between the champions of villages, not unlike those which took place in fair Provence in the palmy pays of *la gaye science.* More than this, I have been assured by Dr. Boas, of Berlin, who recently passed two years among the Eskimo of Baffin's Land, living with them as one of them, that it is nothing uncommon for downright hostile feelings, personal grudges, to be settled by the opponents meeting on a fixed occasion and singing satirical and abusive songs at each other. He who comes out best, raising the most laughter at his antagonist's expense, is considered to have conquered, and his enemy accepts the defeat. These controversial songs have been called by the Danish writers "nith songs" from the word *nith,* which is also old English, and means strife or contention.

The distinguished traveller, Dr. Heinrich Rink, who has passed nineteen winters in Greenland, has furnished me the originals, with translations, of several of these nith songs.

As an example, I will read you one which took place between two rivals, *Savdlat* and *Pulangit-Sissok.* Savdlat lived to the north, Pulangit-Sissok to the south. To appreciate the satire, you must know that an Eskimo gentleman prides himself chiefly on two points, first, that he speaks his own tongue with precisely the right accent, which, I need not say, he considers to be the accent of his own village wherever that may be, and secondly, that he is a skilful boatman.

Savdlat begins the poetic duel in these words:

SAVDLAT AND PULANGIT-SISSOK.

SAVDLAT—

The South shore, O yes, the South shore I know it;
Once I lived there and met Pulangit-Sissok,
A fat fellow who lived on halibut, O yes, I know him.
Those South-shore folks can't talk;
They don't know how to pronounce our language;

Truly they are dull fellows;
They don't even talk alike;
Some have one accent, some another;
Nobody can understand them;
They can scarcely understand each other.

PULANGIT-SISSOK—

O yes, Savdlat and I are old acquaintances;
He wished me extremely well at times;
Once I know he wished I was the best boatman on the shore;
It was a rough day and I in mercy took his boat in tow;
Ha! ha! Savdlat, thou didst cry most pitiful;
Thou wast awfully afeared;
In truth, thou wast nearly upset;
And hadst to keep hold of my boat strings,
And give me part of thy load.
O yes, Savdlat and I are old acquaintances.

A similar humorous strain is very marked in most of the Eskimo songs. Indeed, I know no other tribe in America where the genuine fun-loving spirit bubbles forth so freely. In Mexico and Central America, in the midst of beautiful scenery and where the flowery earth basks in the lap of an eternal spring, the tone of most of the songs is sad and lugubrious; or, if humorous, with a satirical, bitter, unhealthy humor, a *Schadenfreude*, which is far from healthy merriment. Dr. Berendt, who spent seventeen years in studying the languages of Central America, has pointedly called attention to the great predominance of words in them expressing painful, over those expressing pleasurable emotions. It teaches us how little the happiness of man depends upon his environment that the merriest of the American nations is found precisely where according to our usual notions almost every cheering and enlivening element is withdrawn from life, where darkness, cold, and destitution, have undisputed rule.

But I will not continue with such generalizations, attractive though they are. Let me relieve their dryness by a little Eskimo song, the full Eskimo text of which you will find printed in Dr. Rink's work entitled "Tales of the Eskimos." As usual, each line is followed by an interjectional burden, which I shall repeat only in part. The song is called

THE SONG OF KUK-OOK, THE BAD BOY.

This is the song of Kuk-ook, the bad boy.
  Imakayah—hayah,
  Imakayah—hah—hayah.
I am going to run away from home, hayah,
In a great big boat, hayah,
To hunt for a sweet little girl, hayah;
I shall get her some beads, hayah;
The kind that look like boiled ones, hayah;
Then after a while, hayah,
I shall come back home, hayah,
I shall call all my relations together, hayah,
And shall give them all a good thrashing, hayah;
Then I shall go and get married, hayah,
I shall marry two girls at once, hayah;
One of the sweet little darlings, hayah,
I shall dress in spotted seal-skins, hayah,
And the other dear little pet, hayah,
Shall wear skins of the hooded seal only, hayah.

But you must not derive the idea from these specimens that the Eskimos are triflers and jesters only. Some of their poetical productions reveal a true and deep appreciation of the marvellous, the impressive, and the beautiful scenes which their land and climate present. Prominent features in their tales and chants are the flashing, variegated aurora, whose shooting streamers they fable to be the souls of departed heroes; the milky way, gleaming in the still Arctic night, which they regard as the bridge by which the souls of the good and brave mount to the place of joy; the vast, glittering, soundless, snowfields; and the mighty, crashing glacier, splintering from his shoreward cliffs the ice mountains which float down to the great ocean.

As an instance of this appreciation of natural scenery I shall read you a song obtained by Dr. Rink, at the small trading station of Arsut on the southern coast of Greenland, near Frederickshaab. Close to Arsut stands Mt. Koonak, whose precipitous sides rise fully four thousand feet above the billows of the Atlantic which dashes against its foot. It is the play of the clouds about this mountain which inspires the poet:

MOUNT KOONAK: A SONG OF ARSUT.

I look toward the south, the great Mount Koonak,
To great Mount Koonak, there to the south;
I watch the clouds that gather round him;
I contemplate their shining brightness;
They spread abroad upon great Koonak;
They climb up his seaward flanks;
See how they shift and change;
Watch them there to the south;
How the one makes beautiful the other;
How they mount his southern slopes,
Hiding him from the stormy sea,
Each lending beauty to the other.

If we leave the Eskimos and survey the numerous tribes which occupied the territory between Hudson Bay and the Gulf of Mexico, we find ample evidence in the early writers that most of their sacred rites and social relaxations were accompanied with singing and dancing. More than this mere fact, however, we do not learn. The indifference or hostility of the first settlers, the difficulty of comprehending the songs, and the notion among the missionaries that they were all of the nature of incantations and devil-worship, combined to prevent any record of them from being kept. Nevertheless, in the latter half of the half century the Indian traders, James Adair and J. Long, took a more enlightened view in their writings, and early in the present century a number of texts and translations of the Chipeway "medicine songs," as they are called, were obtained by Dr. James from John Tanner, who had been among the northwest Indians from childhood, and were published in the life of that dangerous ruffian.

Only however within the last ten or a dozen years has any systematic effort been made to collect the native songs of the tribes still living within the area of the United States. This has been accomplished largely through the enlightened efforts of the intelligent gentlemen connected with the Government Bureau of Ethnology. I can but mention the names of the Rev. Mr. Dorsey, a student of the Sioux or Dakota; of Mr. Cushing, among the Zunis; of Dr. Mathews, among the Hidatsa and Navajos; and of Miss Alice Fletcher, as some who have paid fruitful attention to this point.

By these means a good deal of authentic material has been collected; but much remains to be done. Often the task is not easy. Besides the difficulties of dialect I have already referred to, the natives harbor a deep distrust of inquiries into their sacred and legendary songs. I will give you an example which is a present one. I and others know as a fact that the Shawnees now resident on the Quapaw Reservation, Indian Territory, possess an ancient song, handed down from long past generations, which is taught in their secret society, and rehearsed in public on one or two occasions every year. This song would be most interesting philologically, and besides is believed to contain precious references to the ancient mythology and traditions of the tribe. At my solicitation, the physician of the reservation, a popular gentleman who speaks the Shawnee tongue, endeavored to obtain this song. His efforts were utterly fruitless. They told him that such a communication to one of another race would certainly be followed by the greatest disasters to their nation. I authorized the doctor to tempt them with red blankets, and shotguns, and other articles such as I considered pleasing to the savage mind, but in vain, and that song remains a sealed book to me. The doctor was too conscientious to call in the last and great argument, that with which Hendrick Hudson conquered Manhattan, the potent fire-water of the pale faces, or I think he might have succeeded.

No doubt there were and are many historical or traditional songs among the natives; but I should have little hope of deriving from them much information of a really historical character. Their references to occurrences are very vague and rather in the form of suggestion than narration. The audience are supposed to be familiar with the story, and a single name or prominent word is enough to recall it to their minds.

I may illustrate this by a short Pawnee song sent me by Mr. Dunbar, whose intimate acquaintance with the language and customs of that tribe lends entire authority to all he writes about them.

About 1820 the Pawnees captured a young girl from their enemies the Paducas, and according to custom, prepared to burn her alive. On the appointed day she was fastened to the stake, and the village gathered around in order to commence the tortures which were to precede her death. At that moment a young Pawnee brave, by name *Pitale-Sharu,* whose heart had been touched with pity and perhaps with love, dashed madly into the ring with two fleet horses. In a moment with his ready knife he had slit the thongs which fastened the girl to the stake, had thrown her on one horse, himself on the other, and was speeding away on the prairie toward her father's village. The Pawnees were literally struck dumb. They retired silently to their cabins, and when, three days later, Pitale-Sharu returned to the village, no man challenged his action. All regarded it as an act of Divine inspiration, even to inquire about which would be sacrilege. This act is remembered to this day in the tribe, and commemorated in the following song:

A PAWNEE COMMEMORATIVE SONG.

Well, he foretold this,
Well, he foretold this,
Yes, he foretold this;
I, Pitale-Sharu,
Am arrived here.
Well, he foretold this,
Yes, he foretold this.
I, Pitale-Sharu,
Am arrived here.

One of the Pawnee war-songs has a curious metaphysical turn. It is one which is sung when a warrior undertakes to perform some particularly daring individual exploit which may well cost him his life. The words seem to call upon the gods to decide whether this mortal life is only an illusion, or a Divine truth under the guidance of Divine intelligence.

PAWNEE WAR-SONG.

Let us see, is this real,
Let us see, is this real,
Let us see, is this real,
Let us see, is this real,
This life I am living?
Ye gods, who dwell everywhere,
Let us see, is this real,
This life I am living.

I read this little Pawnee song to a learned friend, a professor in one of our theological seminaries, and put to him the question whether he considered the psychological sentiment to which it alludes inconsistent with the comparatively low mental state of the Pawnees. His answer was emphatically, *No;* and he illustrated the early stage of development at which such ideas may arise by an anecdote which had recently come to his knowledge of a little girl, seven years of age. She was sitting on her father's knee, and suddenly ceased her childish prattle. After a few moments she resumed with the strange question—"Papa, am I here or am I somewhere else?" Evidently this was an instance where the unreality of all phenomena had somehow arisen to consciousness in the untutored mind of this child. So it does in the mind of the humblest savage, presenting to him, with more or less distinctness, those same problems which foil the acuteness of the profoundest of philosophers.

The so-called Indian medicine-songs cannot be understood without a thorough insight into the habits and superstitions of these peoples, and it would only fatigue you were I to repeat them to you.

I prefer to turn to some of the less esoteric productions of the native muse, to some of its expressions of those emotions which are common to mankind everywhere, and which everywhere seek their expression in meter and rhythm.

A recent German traveller, Mr. Theodore Baker, furnishes me with a couple of simple, unpretending but genuinely aboriginal songs which he heard among the Kioway Indians. One is a

SONG OF A KIOWAY MOTHER WHOSE SON HAS GONE TO WAR.

Young men there are in plenty,
  But I love only one;
Him I've not seen for long,
  Though he is my only son.

When he comes, I'll haste to meet him,
  I think of him all night;
He too will be glad to see me,
  His eyes will gleam with delight.

The second example from the Kioways is a song of true love in the ordinary sense. Such are rare among the North American Indians anywhere. Most of their chants in relation to the other sex are distinctly erotic and licentious, not emotional, or tender; and this holds equally true of those which in some tribes are on certain occasions addressed by the women to the men. The one I give you from the Kioway is not open to this criticism. You may, indeed, consider it of little strength or meaning; but I shall defend it with the words of the Duke in *Twelfth Night:*

> "Mark it, Cesario: it is old and plain:
> The spinsters and the knitters i' the sun,
> And the free maids, that weave their thread with bones,

Do use to chant it; it is silly sooth,
And dallies with the innocence of love,
Like the old age."

So it is with all these songs; and you must not expect me to open up to you treasuries of novel poetic images, but only to show how the spirit of poesy is an inalienable heirloom of the human race, no matter in what condition of civilization we find it.

A KIOWAY LOVE-SONG.

I sat and wept on the hill-side,
I wept till the darkness fell,
I wept for a maiden afar off,
A maiden who loves me well.

The moons are passing, and some moon
I shall see my home long-lost,
And of all the greetings that meet me,
My maiden's will gladden me most.

A specimen of a characteristic Chipeway love-song is given in one of the works of the late Henry R. Schoolcraft. It was chanted by the lover, at night, in front of the dwelling of the girl he would captivate. The song is in four verses, and it will be noticed that each verse approaches nearer and nearer the final request. It should be understood that each verse was to be repeated several times, so as to give the fair one an opportunity to express her approval or disapproval by some of those signs which belong to the freemasonry of love the world over. If the sign was negative and repelling, the singer abruptly ceased his chant and retired, concealed by the darkness of the night; but if he was encouraged, or heard without rebuke, he continued, in hope that at the close of the song timid fingers would partially draw aside the curtain which closes the lodge door, and that his prayer would be granted.

The serenade runs as follows:

SERENADE SONG OF A CHIPEWAY LOVER TO HIS MISTRESS.

I would walk into somebody's dwelling,
Into somebody's dwelling would I walk.

Into *thy* darkened dwelling, my beloved,
Some night would I walk, would I walk.

Some night at this season, my beloved,
Into thy darkened dwelling would I walk.

On this very night, my beloved,
Into thy darkened dwelling would I walk.

While dealing with these amatory effusions, I will add one or two from another part of the map, from the tribes who make their home in our sister republic, Mexico. You are aware that there are many tribes there barely tinged with European culture or religion. They retain the ancestral tongues and modes of thought. The sword and whip of the Spaniard compelled an external obedience to church and state, but the deference to either was reluctant, and in the minimum degree. Consequently, there also the field for research is rich and practically uncultivated. To employ a native metaphor, frequent in the Aztec poets, I will cause you to smell the fragrance of a few of the flowers I have gathered from those meads.

My late friend, Dr. Berendt, personally known, I doubt not, to some present, obtained a curious Aztec love-song, from the lips of an Indian girl in the Sierra of Tamaulipas. It is particularly noticeable from the strange, mystical conceit it contains that to the person who truly loves the mere bodily presence or absence of the beloved object is unimportant, nay, not even noticed. The literal translation of this song is as follows:

"I know not whether thou hast been absent:
I lie down with thee, I rise up with thee,
In my dreams thou art with me.
If my ear-drops tremble in my ears,
I know it is thou moving within my heart."

This rough, literal translation has been put into metrical form as follows:

A MODERN AZTEC LOVE-SONG.

I knew it not that thou hadst absent been,
So full thy presence all my soul had left;
By night, by day, in quiet or changing scene,
'Tis thee alone I see, sense of all else bereft.
And when the tinkling pendants sway and ring,
'Tis thou who in my heart dost move and sing.

In another love-song in the same language I have met a conceit which I indistinctly remember to have read in some old English poet, that of a lover who complains that his heart has been gathered in along with her flowers by a maiden picking roses.

The literal translation of this song reads thus:

"On a certain mountain side,
Where they pluck flowers,
I saw a pretty maiden,
Who plucked from me my heart.
Whither thou goest,
There go I."

As a metrical expansion of this couplet the following has been suggested:

AZTEC LOVE-SONG.

Do you know that mountain side
Where they gather roses?
There I strolled one eventide
In the garden closes.
Soon I met a lovely maid
Fairer than all fancies,
Quick she gathered in my heart
With her buds and pansies.
But take heed, my pretty May,
In reaping and in sowing,
Once with thee, I'll ever stay,
And go where thou art going.

It will be observed that the theme of this little song has a curious similarity to Goethe's celebrated lyric "Röslein auf der Heide;" but I am not afraid to claim that both in delicacy of sentiment and charm of after impression, we must give the palm to the unknown Aztec bard over the artfully concealed coarseness of the great German poet.

Perhaps the refinement of some of these sentiments may excite skepticism. It is a favorite doctrine among a certain class of writers that delicacy of sexual feeling is quite unknown among savage tribes, that, indeed, the universal law is that mere bestiality prevails, more or less kept in bounds by superstition and tribal law. I am well acquainted with this theory of several popular philosophers, and do not in the least accept it. Any such dogmatic assertion is unscientific. Delicacy of sentiment bears no sort of constant relation to culture. Every man present knows this. He can name among his acquaintances men of unusual culture who are coarse voluptuaries, and others of the humblest education who have the delicacy of a refined woman. So it is with families, and so it is with tribes. I have illustrated this lately by an analysis of the words meaning "to love" in all its senses in five leading American linguistic stocks, and have shown by the irrefragable proof of language how much they differ in this respect, and how much also the same tribe may differ from itself at various periods of its growth. As the result of this and similar studies I may assure you that there is no occasion for questioning the existence of highly delicate sentiments among some of the American tribes.

As I have found the Mexican love poems the most delicate, so I have found their war songs the most stirring. We have a number of specimens written down in the native tongue shortly after the conquest. They have never been translated or published, but I will give you a rendering from two in my possession which, from intrinsic evidence, were written about 1510. I say *written* advisedly, for the nation who sang these songs, possessed a phonetic alphabet and wrote many volumes of poems by its aid. Their historian, Bernardino de Sahagun, especially mentions that the works used for the instruction of youth in their schools contained "poems written in antique characters."

The first of my selection is supposed to be addressed by the poet to certain friends of his who were unwilling to go to war.

A WAR-SONG OF THE OTOMIS.

1. It grieves me, dear friends, that you walk not with me in spirit, that I have not your company in the scenes of joy and pleasure, that never more in union do we seek the same paths.

2. Do you really see me, dear friends? Will no God take the blindness from your eyes? What is life on earth? Can the dead return? No, they live far within the heavens, in a place of joy.

3. The joy of the Lord, the Giver of Life, is where the warriors sing, and the smoke of the war-fire rises up; where the flowers of the shields spread abroad their leaves; where deeds of valor shake the earth; where the fatal flowers of death cover the fields.

4. The battle is there, the beginning of the battle is there, in the open fields, where the smoke of the war-fire winds around and curls upwards from the fatal war-flowers which adorn you, ye friends and warriors of the Chichimecs.

5. Let not my soul dread that open field; I earnestly desire the beginning of the slaughter, my soul longs for the murderous fray.

6. O you who stand there in the battle, I earnestly desire the beginning of the slaughter, my soul longs for the murderous fray.

7. The war cloud rises upward, it rises into the blue sky where dwells the Giver of Life, in it, blossom forth the flowers of prowess and valor, beneath it, in the battle field, the children ripen to maturity.

8. Rejoice with me, dear friends, and do ye rejoice, ye children, going forth to the open field of battle; let us rejoice and revel amid these shields, flowers of the murderous fray.

The second selection is a song composed by some bard among the captives whom the Mexicans had taken in their war with the neighboring state of Huexotzinco, in the year 1511, or about eight or nine years before the arrival of Cortes. These captives, as is related in the histories of the Abbé Brasseur de Bourbourg and other writers, were carried in considerable numbers to the City of Mexico, or, as it was then called, Tenochtitlan, and confined in one of its suburbs known as Tlatilolco.

A SONG OF THE CAPTIVES OF HUEXOTZINCO IN BONDAGE IN MEXICO.

1. Only songs that are sad, only flowers that are sad, only such are known here in Mexico, in Tlatilolco.

2. Let us learn them, that we may please the Giver of Life, and not pass to utter destruction.

3. Alas, we have angered Him, we have fallen into misery, we are slaves, we have learned affliction.

4. O Giver of Life, we thy servants drink troubled waters, we eat bitter food, here in Tlatilolco; we are pinched with hunger, we are made acquainted with sorrow, we are worn out with toil.

5. Weeping is ever with us, our tears fall like rain, here in Tlatiloco; as the women of Mexico go down to the water, we are fain to beg of them, for ourselves and our children.

6. Even as the rising smoke lies in a cloud over the great mountain, the Lord of the Waters, so do our afflictions hang over us, here in Mexico, O thou Giver of Life.

7. But ye Mexicans, the time shall come when ye shall fall down and suffer anguish before the face of the Giver of Life; then ye shall howl like wolves.

8. Then shall your salutations be tears, yes, all of you, rulers and slaves, warriors and workers in filth; in that day Tenochtitlan shall be deserted.

9. Weep not, O friends, but know that sometime we shall leave Mexico behind us, and their water shall be made bitter and their food shall be made bitter by the Giver of Life, here in Tlatilolco.

10. See how they go forth, the ruler and his servants, singing their songs; but ere long you shall see them in the midst of the fire, howling like wolves.

The song which I have just read, like most which I bring before you, has no name of author. The poet has passed to an eternal oblivion though his work remains. More fortunate is the composer of the next one I shall read you. It is a poem by an Atzec prince and bard who bore the sonorous appellation, *Tetlapan Quetzanitzin*. I can tell you little about him. At the time Cortes entered the City of Mexico, Tetlapan Quetzanitzin was ruler of one of its suburbs, Tlacopan or Tacuba. At the interview when the daring Spaniard seized upon the person of Montezuma, and made him a captive, this Tetlapan was one of the attendants of the Aztec monarch, and it is recorded of him that he made his escape and disappeared. I have found no mention of his subsequent adventures.

The war-song of his which I read you is one or two of his poems which have survived the wreck of the ancient literature. It is highly metaphorical. You might at first think it a drinking song; but the drunkenness it refers to is the intoxication of battle, like the *Berserkerwuth* of the Norse Vikings; the flowers which he sings are the war-shields with their gay ornaments; and the fertile plains which he lauds are those which are watered with the blood of heroes. Finally, I should tell you that the white wine he speaks of was a sacred beverage among the Mexicans set forth at certain solemn festivals. Like the rest of their wine, it was manufactured from the maguey.

A WAR-SONG OF TETLAPAN QUETZANITZIN (1519).

1. Why did it grieve you, O friends, why did it pain you, that you were drunk with the wine? Arise from your stupor, O friends, come hither and sing; let us seek for homes in some flowery land; forget your drunkenness.

2. The precept is old that one should quaff the strong white wine in the moment of difficulty, as when one enters the battle-plain, when he goes forth to the place of shattered stones, where the precious stones are splintered, the emerelds, the turquoises, the youths, the children. Therefore, friends and brothers, quaff now the flowing white wine.

3. Let us drink it together amid the flowers, let us build our houses among the flowers, where the fragrant blossoms cast abroad their odors as a fountain its waters, where the breath of the dew-laden flowers make sweet the air; there it is that nobility and strength will make glorious our houses, there the flowers of war bloom over a fertile land.

4. O friends, do you not hear me? Let us go, let us go, let us pour forth the white wine, the strong wine of battle; let us drink the wine which is as sweet as the dew of roses, let it intoxicate our souls, let our souls be steeped in its delights, let them be enriched as in some opulent place, some fertile land. Why does it trouble you? Come with me, and listen to my song.

Alongside of these specimens from Mexico, I put a war-song of the Peruvians. It is from the drama of *Ollanta*, a production dating from shortly before the conquest, and one of the most interesting monuments of American native literature. The hero, Ollanta, a warrior of renown but of humble parentage, had, on the strength of his successes against the enemy, applied for the hand of the Inca's daughter, and had been rejected with scorn. All his loyalty and allegiance turns to hatred, and he sings his war-song against his native country and its ruler in these words:

A WAR-SONG OF OLLANTA.

O Cuzco, beautiful city,
Henceforward I shall be thy enemy.
I shall break the walls of thy bosom,
I shall tear out thy heart
And fling it to the vultures.
Thy cruel king shall witness
My thousands of warriors,
Armed and led by me,
Gather, like a cloud of curses,
Against thy citadel.
The sky shall be red with thy burning,
Bloody shall thy couch be,
And thy king shall perish with thee.
Gasping in death, with my hand on his throat,
We shall see if again he will say:
"Thou art unworthy of my daughter,
Never shall she be thine."

A variety of poetic production of frequent occurrence among the aborigines is the prophetic. You are aware that it is by no means peculiar to them; the oracle at Delphi, the sibylline leaves in the Capitol, the words of the Hebrew seers, even the forecasts of Nostradamus, were usually cast in the poetic form. The effort to lift the veil of futurity is one ineradicable from the human breast, and faith in its possibility is universal. Those prophets who are wise, those augurs who pass the wink to each other, favor great obscurity and ambiguity in their communications, or else express themselves in such commonplaces as that man is mortal; that all beauty fadeth; that power is transitory, and the like. We find both kinds flourished in ancient America. You may remember that Montezuma in his first interview with Cortes told the Spanish invader that the arrival of a white and bearded conqueror from the East had long been predicted by Mexican soothsayers. Similar prophecies were current in Yucatan, in Peru, and in other portions of the continent. They are all easily explained, and there is no occasion either to question the fact, or to seek for them any supernatural inspiration. It would lead me away from my theme to enter into a discussion of their meaning, but I should like to read you two brief examples of them. Both are from the Maya language of Yucatan, and I have no doubt both antedate the conquest. The first, according to an expression in the poem itself, was composed in the year 1469. It was the prediction of a Maya priest at the close of the indiction or cycle which terminated in that year of our chronology.

THE PROPHECY OF PECH, PRIEST OF CHICHEN-ITZÁ (1469).

Ye men of Itzá, hearken to the tidings,
Listen to the forecaste of this cycle's end;
Four have been the ages of the world's progressing,
Now the fourth is ending, and its end is near.
A mighty lord is coming, see you give him honor;
A potent lord approaches, to whom all must bow;
I, the prophet, warn you, keep in mind my boding,
Men of Itzá, mark it, and await your lord.

The second example of these mystic chants which I shall give you is from a curious native production called "The Books of Chilan Balam," a repertory of wild imaginings and scraps of ancient and modern magical lore, which is the very Bible of the Maya Indians. Although I have a copy of it, I have been unable to translate any large portion of it, and my correspondents in Yucatan, though some of them speak Maya as readily as Spanish, find the expressions too archaic and obscure to be intelligible. This particular song is that of the priest or soothsayer Chilan, from whom the sacred book takes its name. There is every reason to believe that it dates from the fifteenth century.

RECITAL OF THE PRIEST CHILAN.

Eat, eat, while there is bread,
Drink, drink, while there is water;
A day comes when dust shall darken the air,
When a blight shall wither the land,
When a cloud shall arise,
When a mountain shall be lifted up,
When a strong man shall seize the city,
When ruin shall fall upon all things,
When the tender leaf shall be destroyed,
When eyes shall be closed in death,
When there shall be three signs on a tree,
Father, son and grandson hanging dead on the same tree;
When the battle flag shall be raised,
And the people scattered abroad in the forests.

Such poems properly belong to the mythologic class. This class was fully represented in the productions of the primitive bards, but chiefly owing to the prejudices of the early missionaries, the specimens remaining are very few. One of the most charming is a little Peruvian song representing the myth of the thunder storm. It is preserved by Garcilasso de la Vega and reads as follows:

QQUICHUA SONG TO THE GODDESS OF RAIN.

Beauteous princess,
Lo, thy brother
Breaks thy vessel
Now in fragments.
From the blow come
Thunder, lightning,
Strokes of lightning.
And thou, goddess,
Tak'st the water,
With it rainest,
And the hail or
Snow dispensest.

Viracocha,
World-constructor,
World-enlivener,
To this office,
Thee created,
Thee appointed.

I could continue to bring before you specimens of this quaint and ancient lore. My garner is by no means emptied. But probably I have said enough for my purpose and your patience. You see that the study of the aboriginal poetry of our continent opens up an unexpectedly rich field for investigation. It throws a new light not only on the folk-songs of other nations but on the general history of the growth of the poetic faculty. More than this, it elevates our opinion of the nations whom we are accustomed to call by the terms savage and barbarous. We are taught that in much which we are inclined to claim as our special prerogatives, they too have an interest. In the most precious possessions of the race, in its high ideals, in its noble devotions, in its tender sentiments, in its aspirations for the infinite and the forever true, they also have a share. They likewise partake, and in no mean degree, of that sweetest heritage of the race, the glorious gift of song, "the vision and the faculty divine."

In the discussion that followed the President's address, Mr. Law called attention to the shock the doctrine of evolution receives from the idealistic conceptions discovered among the lowest tribes.

Mr. Myer, the historiographer, read a memoir of the late Hon. Anthony Walton White Evans, a corresponding member of the Society.

FEBRUARY 4TH.

Mr. Stewart Culin read by appointment a paper entitled "Chinese Gambling Games in America."

Mr. Frank Willing Leach stated that he had recently visited the Seminole Indians in Florida. At his request, President Brinton gave the following account of the Florida Indians:

"The native population of Florida at the discovery, consisted chiefly of the Timucuana tribe. They became wholly extinct in the 18th century, and their lands were occupied by the Lower Creeks, whose first irruptions were under Colonel Moore in 1705. The Seminoles were an offshoot of the Lower Creeks. Their proper name is *Ishti seminoli*, 'separated men,' from the division which took place in the tribe from their parental source. They speak a dialect of the Muskokee or Creek tongue. At present they number but a few hundred souls. Their last war with the whites was in 1857, after which most of them were transported to the Indian Territory."

MARCH 3D.

A paper by Dr. Frederick Horner, of Salem, Va., entitled "What remains of the Washington Library, January 1st, 1887," was read. In the discussion that followed, Mr. John R. Baker stated that he had in his collection, seventy or eighty volumes from the library of General Washington, containing his autograph and book plate, and that among the most remarkable of these books is a copy of "The Federalist," with Washington's attribution of the authorship of the articles in his own handwriting.

Mr. Francis Jordan read a communication with reference to two artificial shell heaps on the New Jersey coast, explored by him in company with Mr. Barber, of which the following is an abstract: "One of these remains is on the property of Sylvester Mathis, on Flax Island, within the borough precincts of Tuckerton. Broken shells cover almost the entire surface of the island, but there is nothing remarkable about the deposit. For many years the place has been dedicated to picnic parties and the like, and all traces of its aboriginal character have disappeared. The other and far more interesting mound occupies a sand spit on the salt meadows at the mouth of Tuckerton Creek, where it empties into Egg Harbor Bay. It stands out in solitary prominence above the low level of the surrounding meadows, and is visible for a great distance in every direction. Triangulations of the coast were made from it by the Coast Survey. It has been known from time immemorial as 'The Hummock,' a well recognized relic of the prehistoric epoch. I found this deposit to be one of the best preserved, as well as the largest single mound that I have so far examined, and evidently the accumulation of centuries. It measures 200 feet in length and 60 feet in width and rises about twelve feet above the meadows. There are indications of its great antiquity. On its summit are seven large red cedar trees, one of which measures five feet in circumference. These have grown since the deposit was abandoned. It was a source of disappointment to find that others had preceded us in the field of research, but whether simply as relic hunters, or bent upon scientific observation, could not be ascertained. We were saved the trouble, however, of making excavations, as our predecessors had cut down the western slope to a depth of over six feet, thus disclosing the composition of the mound, which consists of an almost solid mass of clam and oyster shells intermingled with charcoal. We were unable to find a single specimen of aboriginal workmanship, not even so much as a flint clipping or the smallest fragment of pottery."

Mr. Lewis A. Scott exhibited specimens of charcoal from shell mounds near Cape May, which he said he had submitted to chemists who declared that it was impossible to determine by analysis whether they were produced by the action of fire or by time and moisture, the presence or absence of ashes alone determining this question. It was the opinion of the members present, upon careful examination of the specimens exhibited, that they had been produced artificially by fire. Mr. Scott stated that no bones or other remains were found in these shell heaps.

President Brinton called attention to the importance of preserving all bones discovered in shell-heaps and similar deposits, dwelling upon the important deductions made by foreign archæologists from such remains.

Mr. Myer, the historiographer, read a sketch of the life and services to science of the late Col. Charles C. Whittlesey, a corresponding member of the Society.

APRIL 6TH.

A special meeting was held this evening at the Hall of the City Institute, N. E. corner of Eighteenth and Chestnut Streets. By invitation of the Society, Mr. Tatsui Baba,* of Tokio, delivered an address entitled "The Arts and Customs of Ancient Japan." His lecture was illustrated with specimens of ancient Japanese armor, weapons, and coins, and was attentively listened to by a large audience composed of members of the Society and their families and friends.

MAY 4TH.

Mr. Isaac Myer read by appointment a paper on the "Mikrokosm and the Makrokosm." Mr. Myer also exhibited a set of ten beautiful bronze medals of the artists of the Italian *renaissance*, from the collection of Frank T. S. Darley, Esq., of Philadelphia.

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* Mr. Tatsui Baba died in Philadelphia on the 1st of November, 1888. His early death cut short a career of great promise, and was much regretted by his many friends. His valuable collection of Japanese armor and weapons became the property of the Pennsylvania Museum in Memorial Hall, Fairmount Park, where they form part of the permanent collection.

A gift of 52 copper and base coins, consisting of pieces of the East India Companies and foreign coins current in India, was received from Captain Richard C. Temple.

OCTOBER 5TH.

The first meeting at the new Hall of the Society, N. W. corner of Eighteenth and Chestnut Streets, was held this evening, when two papers by the Rev. W. M. Beauchamp, of Baldwinsville, N. Y., were read. The first paper was illustrated with the sketches reproduced in Plates I, II, and III, and was as follows:—

NOTES ON EARLY MEDALS, RINGS, ETC.,

found in Onondaga and Cayuga Counties, N. Y., from manuscript volumes of Onondaga Antiquities compiled by the author.

My three large volumes of notes on Onondaga Antiquities comprise about 4,500 drawings of relics, made by me from the articles themselves, of which the larger part are of prehistoric age. Occasionally, however, I have drawn objects used by the Indians, but of European manufacture; while a few were made by the Indians at a late day. Most of the relics of the true Onondagas are recent, and European articles have been plentiful upon their several town-sites of the 17th and 18th centuries. It seems certain that few beads or ornaments of shell have been found on prehistoric sites in all this large country, while many, elaborate and beautiful, occur on the sites subsequent to 1650. I have figured only two shell beads from a site earlier than 1600. The early inhabitants had no wampum, and aside from fresh-water clams I have rarely met with fresh-water shells on any sites and never any that were worked. One Unio bead has been found.

The early Jesuit missionaries introduced their medals and ornaments into Onondaga after 1650, and a few have been found referable to the English and Dutch. Many ornaments were made on the spot, out of sheet copper or silver, and some out of copper wire. Shreds of sheet copper are found on recent sites, with the pendants and arrows which were cut from them. As blacksmiths were furnished to them both by the English and French, it is probable that many iron articles were also made here. I have figured a leathern belt having lines of copper tubes inserted, much like that with "The Skeleton in Armor" at Fall River, and the recent copper arrows are precisely like those from there.

Silver brooches, etc., were made by the Onondagas not long since, but they are fast becoming rare. I have figured a number, and have twenty-four good specimens of my own. I have also been able to obtain a little of their wampum, arranged for council use, and some other articles.

Apparently the Onondagas were driven out of their original seats in Jefferson County, N. Y., late in the 16th century, perhaps a little after the Mohawks left Montreal. Our first historic knowledge of them is from Champlain's invasion of their country in 1615. If the reputed site be accepted, in the town of Fenner, Madison County, they were then fifteen miles east of where they dwelt in 1650. The proposed site is not free from difficulties, but is the only probable one that has been suggested, and is generally accepted. In this case, finding they were not here secure from their enemies, they next established themselves on the west line of Madison County, near Cazenovia, and for all practical purposes in Onondaga County. That is, they were on the east side of the Limestone Creek Valley, where all their successive villages were until after 1680. They soon established villages actually in Onondaga County, five and six miles farther south, and still more removed from their foes. Their supposed removal after the invasion of 1615 had been about ten miles southwest. This carried them eventually as much as eighteen miles from their first settlement in Central New York. Then they worked northward again down the valley, being about ten miles north of their most southerly outpost not far from 1640. Their removal made the march against the Hurons, now on the defensive, so much shorter. The success of their war and the swelling of their numbers by the captives, made the site of this town too small, and they removed to Indian Hill in Pompey after the close of the Huron war. Here they had ample room, and, as they now had no powerful enemy, they did not fortify this town. Father Le Moyne visited them here in 1654 and was followed by other Jesuit missionaries, and on this and the neighboring sites of this valley the European relics have been most abundantly found. Perhaps thirty years later they removed five miles west into the valley of the Butternut Creek, where their town was burned in 1696, at Frontenac's invasion. The missionaries continued their operations here, and the spot has furnished many interesting relics. During part of the Onondaga residence on this spot, they had a fishing village at Onondaga Lake, called *Kaneenda*, where some French relics have been found.

A few years later, in the first half of the 18th century, the Onondagas removed five miles farther west, into the Onondaga Valley, where they still remain, though not on the sites of their first settlements there. They are now some miles south of these. Here they were more completely under English influence. Sir Wm. Johnson built them a fort on the west side of the creek, a mile south of the present village of Onondaga Valley; the French came no more, and thus there are found there no crucifixes and French medals.

In the following notes, I indicate in parenthesis the volume and number of the several figures as found in my Onondaga antiquities:

Plate I, Fig. 1.—Bronze medal from Kaneenda, Onondaga Lake (ii, 438). Belongs to Major T. H. Poole, of Syracuse. On one side a monk at half length, bearing a banner with I. H. S. upon it. Inscription, S. IO ANNE S. CAPISTR.* Reverse, a monk at half length with head thrown back, and a chalice, surmounted by a small head, before him. Inscription, S P A S (chalice in border) CHALIS B ON.†

Fig. 2.—Oval copper or bronze medal (ii, 490). Found near Seneca River, at Baldwinsville, N. Y. It is very thin and has the usual loop. On one side is a border of fifteen stars. In the centre is a cross resting on a bar across the letter M. Below are a flaming heart and one pierced with a sword. Reverse, a graceful female in the centre with a halo around her head, and drooping palm branches in each hand. She seems to be treading on a serpent. The inscription is in a double line about the edge, and is in German. As nearly as can be made out it is as follows:—On the outside, the first part being indistinct: GEHE FA GEN——NDE EMPFANGEN. BITT. FUR. UNS.

Inside:—D: W: ZU: D: UNSRE: ZU: FURCHT. NEHMEN.(?)

I was inclined to ascribe this to the Moravians, as another medal which I shall mention is so ascribed, and the inscription is more like their selection than that of the Roman Catholics. I have compared it, however, with a small silver medal found at Mobile, Alabama, which has upon one side the hearts, the cross, and letter, and twelve stars, and upon the other the figure of the Virgin Mary, as in this; but the double line of the inscription is in English and reads:

"O Mary, conceived without sin,"
"Pray for us who have recourse to you."

Fig. 3.—Silver medal found near Eagle Village, Manlius, Onondaga County, N. Y. (ii, 1222). It is English; the French spelling of Onondaga being different. On one face is a city with the name, "Montreal," above it. A cartouch under the picture has the initials D. G. F. On the reverse the surface was made perfectly plain, and across

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* Doubtless for S. Johannes Capistranus.—Ed.

† For S. Paschalis Boiron.—Ed.

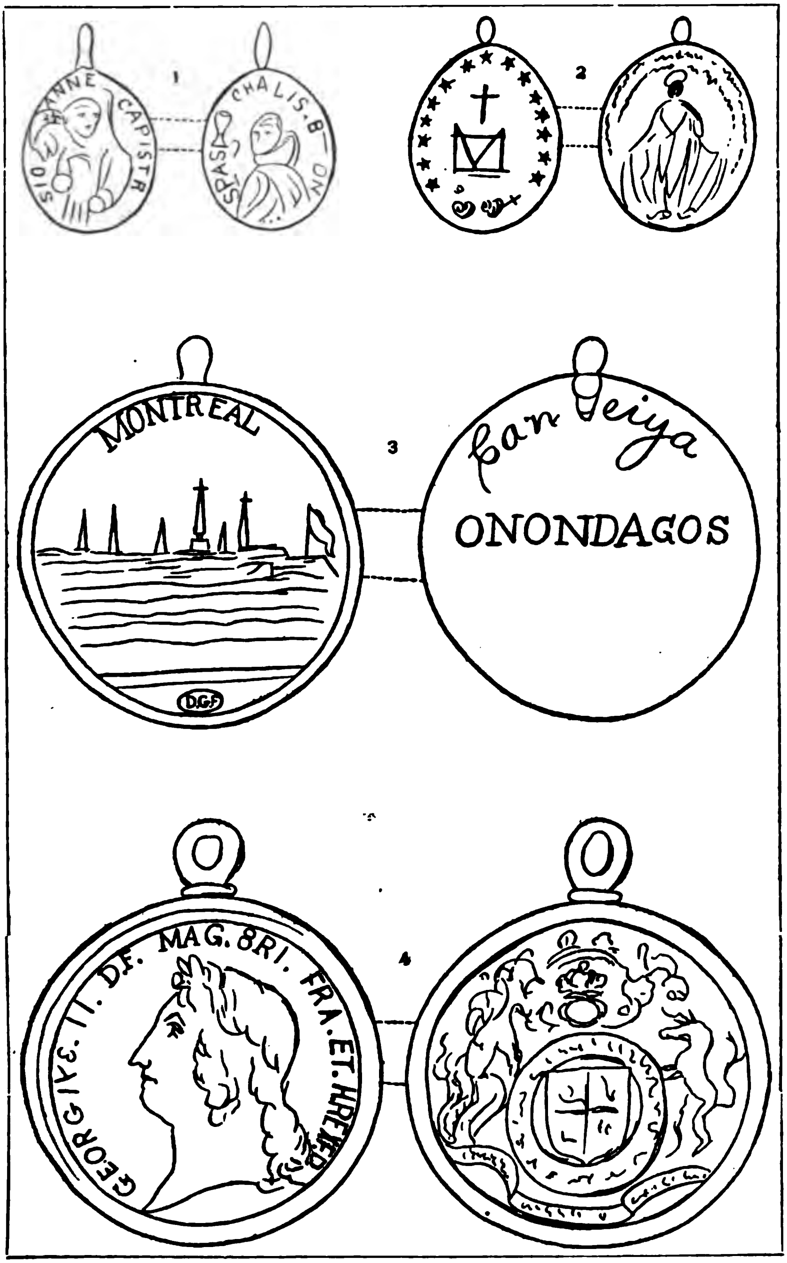

1
ANNE CAPISTR
SIO
CHALIS.B ON
SPAS
2
3
MONTREAL
D.G.F
Can Veiya
ONONDAGOS
4
GEORGIVS. II. DF. MAG.BRI. FRA.ET.HREX.FD

PLATE I.

the centre the word "ONONDAGOS" is engraved. I think it was issued by Col. Daniel Claus during the Revolutionary War. He was then Indian Agent at Montreal, and while Sir William Johnson gave the modern spelling to Onondaga, Claus always spelled it with an *o;* as in March, 1777, and in a Conference in April, 1759. The name is thus spelled in Haldimand's Conference at Quebec, August, 1779.

Divided by the loop above is the name of the Indian who wore it, in script: *Caneiya.* J. V. H. Clark describes the word as "Canecya, Onondagoes," and the cartouch "D. C. F.," both these being mistakes. It has no date, but he says (Hist. of Onondaga, ii, p. 274): "This must be at least older than the Revolution." For reasons given I differ with him. It is in good preservation.

Fig. 4.—Silver Indian medal of George the Second's time (ii, 1241). This belonged to Mr. John Jones, a farmer near Baldwinsville, now dead. It was taken from the body of an Indian chief—the story is somewhat confused—and came down to Mr. Jones as an heirloom. Although it has been roughly handled it is in fine preservation, partly because the rim and some other parts are in quite high relief. On one side is the English coat of arms, etc. On the other a head of George II, well executed, and bearing the inscription, "Georgius, II. D: G: MAG: BRI: FRA: ET: H: REX. F. D." There is no date, but it would be between 1727 and 1760. Queen Anne seems to have first given medals to the Indians.

Plate II, Fig. 1.—Polychrome bead from Pompey; 17th century (iii, 504). After 1650, and perhaps a little before, shell, porcelain, and glass beads became abundant among the Onondagas, and are frequent on the sites in Pompey. They are in many forms. The true wampum is the most common of the shell beads, but long cylindrical and discoidal beads are met with. Ornaments of shell and bone also became abundant, and about the same time catlinite ornaments were introduced, but later than the others. Porcelain beads were usually about the size and form of a pea. The figure is of a glass bead of the largest size. Some were very long and slender and might be striped or not. This one is red, white, and blue.

Fig. 2.—Polychrome bead (iii, 506). A more frequent size. Red, white, and blue. They are sometimes black with yellow dots. Others are green, cut in large facets. Great quantities have been gathered, but few are found now.

Fig. 3.—Bronze ring from Indian Hill, site of 1654 et seq. (iii, 708). This had a head and key as a signet. A great many of these rings have been found, often in graves.

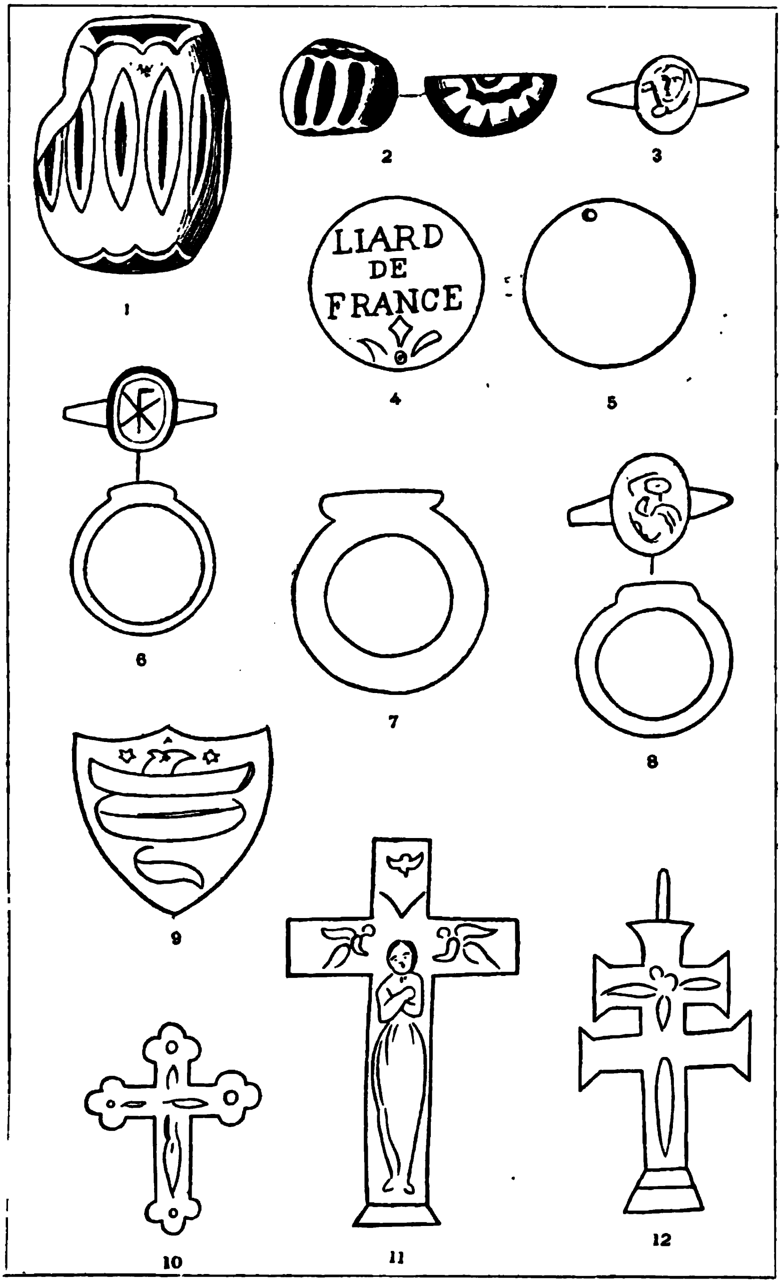


PLATE II.

Fig. 4.—A copper coin, perforated for suspension. Indian Hill, Pompey (iii, 705). On one side is "Liard de France." On the other a head of Louis——.

Fig. 5.—Copper coin perforated for suspension. Same place (iii, 705). Too much worn to make out design.

Fig. 6.—Ring of fine bronze, of a golden hue (iii, 730). The signet is the *Chi Rho*, the Greek monogram for the name of Christ. From Indian Castle, Pompey, 1½ miles S. W. of Indian Hill, where there was a large burying ground, apparently mostly Christian. I might have figured many rings which I saw there.

Fig. 7.—A shell finger-ring (iii, 850). From Scipio, Cayuga County, N. Y. A fine, but recent article. Articles of shell and bone are frequent there.

Fig. 8.—Bronze finger-ring from Cayuga County (iii, 860). Mr. W. W. Adams, of Mapleton, Cayuga County, has quite a number of these.

Fig. 9.—A small silver shield from Pompey Hill (iii, 928). No inscription, but seems to be U. S. eagle and stars. Found with Indian relics.

Fig. 10.—Bronze cross. Site of 1696 (iii, 931).

Fig. 11.—Figure of Virgin Mary (iii, 930).

Fig. 12.—Bronze double cross. Site of 1696, one mile south of Jamesville, on Lot 3, Lafayette (iii, 929). Corroded, and figures indistinct.

Plate III, Fig. 1.—Twisted glass bead; brownish red. From a grave in Fleming, Cayuga County, N. Y., 1887 (iii, 1416).

Fig. 2.—Brass or bronze bell, Fleming. These are also found in Pompey, Onondaga County (iii, 1438).

Fig. 3.—Bronze ring. Scipioville, Cayuga County (iii, 1460).

Fig. 4.—Brass crucifix. Same place (iii, 1463).

Fig. 5.—Bronze medal (iii, 1461). Francis Xavier. Same place. There were many from this site, but I outlined but a few, and took but slight descriptions.

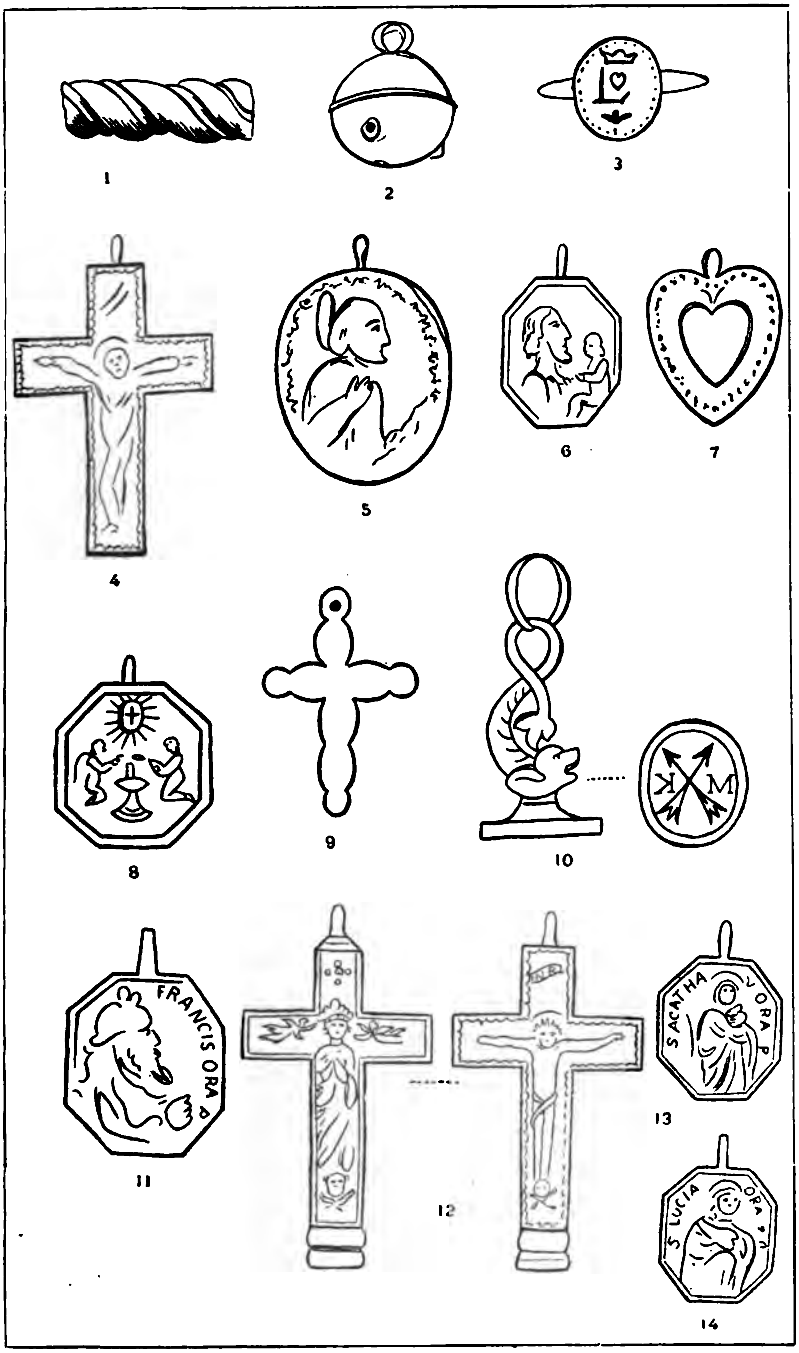
Fig. 6.—Bronze medal. Same place (iii, 1461).

Fig. 7.— " " " " "

Fig. 8.— " " " " (iii, 1464).

Fig. 9.—Flat silver cross. From site called East Cayuga in Sullivan's campaign (iii, 1398). This is cut out of flattened silver, much as the brooches were made, but has not the ornamental work bestowed on them. I think this Indian work.

Fig. 10.—Silver seal (iii, 1403). This seems English. East Cayuga. A dolphin handle. The signet, two arrows crossed, and the letters K. M.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S AGATHA ORA P
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S LUCIA ORA P
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PLATE III.

Fig. 11.—Medal of St. Francis. One out of many fine brass medals from Scipioville, "St. Francis ora p." (iii, 1458).

Fig. 12.—This and the next two figures are from Clark's History of Onondaga, all from the site of 1696. On one side of the crucifix is Christ, on the other the Virgin Mary. Brass.

Fig. 13.—This medal is of brass an inch long, with the figure of a woman, and the words "St. Agatha, ora p."

Fig. 14.—Described as a silver medal half an inch long. A woman's figure, and the words "St. Lucia, ora p. n."

In Clark's History of Onondaga there are descriptions of some medals. From Indian Hill was a brass medal without date. On one side was a figure of Louis XIV, King of France and Navarre. On the reverse, "a field, with three flowers de luce, supporting a royal crown, surrounded by the name of Nalf Lanfar & Co. About the size of a Spanish pistareen. On this spot the copper coins were French, though so much corroded that the marks and dates could not be deciphered." Under date of 1849, "a curious brass image was recently found there, probably a part of some Romish priest's collection."

At "the castle," a mile S. W. of Indian Hill, ornaments seem rather more abundant. A brass medal was found there, a horseman on one side, "and on the other, William, Prince of Orange, with a crest or coat of arms; the date was obliterated." This would indicate that some remained on this site after the main body moved to Butternut Creek.

Brass nose jewels, bearing the inscription, "Roi de France et Dieu," and crescent-shaped, are said, by Clark, to have been found in Pompey, but I have met with none. Some perforated plates of brass, which I have seen, may have been used for such purposes, but are more likely to have been employed otherwise.

From Clark I quote the following: "A valuable cross of gold was several years ago found in the west part of Pompey, and was sold for thirty dollars. The significant 'I. H. S.' was upon it. Numbers of crucifixes and crosses have been found. Brass crosses are frequently found with these letters, and the initials of the Latin title put upon the cross at the crucifixion, 'I. N. R. I.,' and so are medals of the same metal. One was recently found on the farm of David Hinsdale, about the size of a shilling piece. The figure of a Roman pontiff, in a standing position, in his hands a crosier, surrounded with this inscription: '*B. virg. sin P. origi. con.*,' which we have ventured to write out, '*Beata virgo sine Peccato originali concepta*,' or as we might say in English, 'The Blessed Virgin conceived without original sin.' On the other side was a representation of a serpent, and two nearly naked figures, looking intently upon it. . . . It is oval in shape, and bored that it might be suspended from the neck."

A silver medal was found near the site of 1696, in 1840. It was about the size of a silver dollar, and nearly as thick. On one side is an angel on the wing, distant mountains and an Indian village. In the foreground are Europeans, as pilgrims and priests, decreasing till lost in distance, with their animals and carriages. On the right are a cottage, warehouse, and grain. The surrounding inscription is in German: "GEHE AUS DEINEM VATTER LAND, 1 b. M., XII., V. 1," and at the bottom across, "Lasst Hier Diegvter." On the opposite face is the sun shining upon a civilized town, domestic animals, farmers, and mechanics. Nearer are groups of Europeans, and on the right is an open church, from the door of which an old man extends welcoming hands. The surrounding inscription is "UND DV SOLLT EIN SEEGEN SEYN, 1 b. Mos., XII., V. 2.," and at the bottom, "GOTT GIBT SIE WIEDER." Clark gives a little fuller account, and adds, "The interpretation of the first side is—Get thee out from thy country and friends, thou shalt surely be a blessing. On the reverse side, which should be read in connection—Leaving thy goods behind thee, God will restore them to thee again." Chapter and verse are given.

Clark thought this "goes positively to establish a hitherto doubtful point, to wit, the early establishment of missionaries by the Dutch among the Onondagas." He queries, "May not this medal be a relic of the Zeisberger mission of 1750?"

A little south of the old fort on Butternut Creek, many relics have been found. Clark says, "Brass crosses have frequently been plowed up, and some of the most perfect and highest finished ones have, over the head of the Saviour, the letters I. N. R. I. Most of the crosses found in other places have the letters I. H. S."

I may add that in the summer of 1887 forty-four French coins were found on a Cayuga site. They were of 1656. I did not learn whether they were all alike.

Mr. Beauchamp's other paper was as follows:

MIGRATIONS OF THE ONONDAGAS.

There are prehistoric sites and forts in the country north and northwest of Onondaga Lake, but they are of a different character in form and relics from those of the known Onondagas, the nearest corresponding sites being in Jefferson County to the northeast, on the St.

Lawrence and Lake Ontario. The intervening country presents no sites of importance. Hence I have thought that the Onondagas, being hard pressed by the Hurons and Algonquins after the Mohawks were driven from Montreal, left Jefferson County not far from A. D. 1600, and settled at the site of 1615 in Madison County. There are some objections to this site, but as yet it is the only probable one known.* This hilly region gave them their proper title of *Onondagas*, or "People of the Hill." They never abandoned the hills.

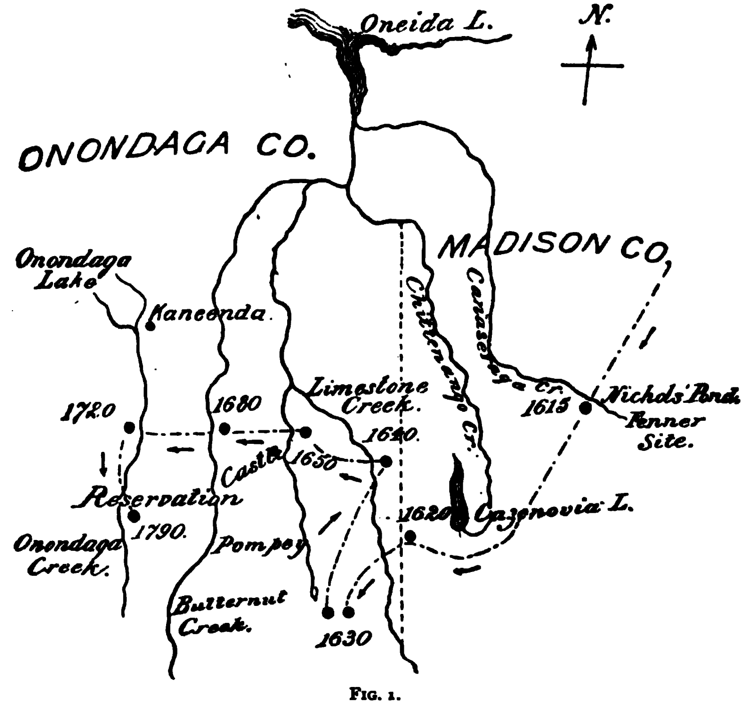

Fig. 1.

1620.—I give migrations in round numbers and approximately. The next fort was ten or twelve miles southwest, in the valley of Limestone Creek, and now seems the original settlement.

1630.—Two forts, five or six miles southwesterly, commanding a view of the whole valley. European relics are abundant there.

1640.—A fort ten miles north of these. Certainly the succeeding site, but a small fort half way between, may have been occupied in both periods.

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* Mr. Beauchamp writes under date of October 11, 1889: "There are strong reasons for considering this an Oneida instead of an Onondaga village, in which case the fort west of Cazenovia Lake would be the oldest village known of the true Onondagas."

1650.—The large site on Indian Hill, with a small village on the west.

1680.—They left this valley and went to the east side of Butternut Creek, where their fort was burned in 1696.

1720.—They left this valley and went to the west side of Onondaga Creek, where traces of the fort built for them in 1756 by Sir Wm. Johnson still remain.

1790.—At various times after the Revolution their reservation was contracted and they now live in Onondaga Valley, eight miles south of Syracuse and mostly on the east side of the creek.

The idea that the council fire of the Six Nations had burned in this valley for ages is baseless, although the Indians there now have no stories of any residence outside of it. I cannot think the league was formed on Onondaga Lake, unless this was in the 17th century. Before that they lived far away from this lake, and other spots were much more central. It is worthy of note that they knew so little of this lake when Le Moyne visited them in 1654, as to think the salt springs poisonous. The early traditions made the league much more recent than the later ones of this generation, and archæological evidence favors the former.

Mr. Henry Phillips, Jr., made some remarks on the subject of Volapük in which he criticised the language as being, in his opinion, one of the most difficult he had ever examined, the phonology being particularly difficult and the grammar confused.

NOVEMBER 3D.

Mr. Henry Phillips, Jr., read a paper entitled "Numismatic Eschatology," and a communication on the new silver coinage of the Congo Free State.

Mr. Culin read the following paper, entitled

"THE I HING OR 'PATRIOTIC RISING,' A Secret Society among the Chinese in America."

Many secret associations have existed among the Chinese people and played an important part in the political history of China. Directly traceable to the system of clans, they have assumed both a political and religious character, and during the present dynasty have been the means through which the popular spirit has asserted itself against the domination of the Manchus, and been the source of constant and serious apprehension to the government. Twice during the present century their efforts have culminated in open rebellions which have only been subdued after protracted wars, accompanied with much desolation and bloodshed.

The most powerful of the existing societies, with which many, if not all, of the others are affiliated, is mentioned in Section CLXII of the code of the present dynasty, for the purpose of interdicting it as the Pih-lien kiao, or "Water-lily Sect." Since then its name is said to have been changed to the Tien-tí hwui, or San-hoh hwui—*i. e.*, "Triad Society," though both names are said to exist—the former in the northern, and the latter in the maritime provinces and the Indian Archipelago.*

According to Dr. Williams little news has transpired concerning these seditious organizations in China since the suppression of the Tai-ping rebellion in 1868,† but I am credibly informed by an American who has recently travelled much in the interior as a photographer and been brought intimately in contact with the people, that the revolutionary society flourishes and its membership, constantly increasing, embraces all classes, from officers holding the highest positions under the government down to the poorest peasants. The utmost secrecy is observed, but its influence is felt in the councils of the state, and it is even intimated that the settlement of the recent war troubles with France was much complicated by the indifference or design of officials who were in sympathy with the movement.‡

In the colonies which the thrift and enterprise of the Chinese of the southern provinces have established in Siam, Malacca, Singapore, and the Archipelago there is no occasion for secrecy or concealment. Their oath-bound societies flourish unmolested, have their public meeting-places and processions, and virtually dominate and control the entire Chinese population.

There exists an off-shoot of the great national society among the Chinese in America. It is popularly known as the *I hing*, or "Patriotic Rising," and embraces nearly two-thirds of all the Chinese in the country.

It was instituted in San Francisco between 1850 and 1860, during the time of the Tai-ping rebellion, when many of the emigrants were refugees from the outbreak which then occurred in the southern provinces. At present there are branches of the original society in most of the American cities in which there are Chinese colonies. These are known by different names, but are united in policy and object, and are in constant communication with each other.

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* S. Wells Williams, *The Middle Kingdom*, New York, 1883, Vol. I, p. 493.

† Ibid., Vol. II, p. 267.

‡ The Chinese here identify the Black Flags as members of the *I hing* and say that their leader, *Lau I*, whose picture is sold in their shops, came originally from a place called *Pát P'ái* in Kwangsí, where the brotherhood is said to have a stronghold.

The order in San Francisco and throughout the State of California is called the *Chi Kung T'ong*. It has a hall on Sacramento Street in San Francisco. In addition to the principal assembly, there are said to be several subsidiary ones, known by different names—such as the *Hip I T'ong* in San Francisco. To these lesser companies, which are said to have for an object the protection of gambling-houses and the care and surveillance of those unfortunate women who constitute the greater part of the female emigrants from China, many offences against the law are attributed. They are popularly regarded as bands of outlaws ready and willing to commit any crime which the policy of their leaders may dictate. In Chicago and St. Louis the society is called the *Hung Shun T'ong*. Here, too, numerous crimes are attributed to the emissaries of the dreaded *I hing*.

In New York city, the centre of a Chinese population numbering between 5,000 and 6,000 souls, the order is known as the *Lün I T'ong*, and has a hall at No. 18 Mott Street. Such halls serve as club-rooms for members and are resorted to by visiting members from other cities, lists being kept of the names of the brotherhood throughout the country.

In Philadelphia the society flourishes, but as yet has no permanent hall for its meetings. The company or guild calls itself the *Hung Shun T'ong*, as in Chicago, and its assemblies for the admission of new members, which occur at frequent intervals, are held in a room hired for the occasion.* Here the writer has had some opportunities for studying the order, and the following account is based in part upon personal observation.

Chinese society in Philadelphia appears to be sharply divided into two classes: the *I hing* and those who do not belong to the order. It should be observed that the Chinese in America come exclusively from the province of Kwantung, seven or eight districts of which furnish almost the entire number. Nánhái, Pw'anyú, and Shunteh, called together the *Sám Yup*, or "Three Towns" (or districts), and Sinhwui, Sinning, Kaiping, and Ngănping, known as the *Sz' Yup*, or "Four Towns," the people from each of which show distinctive peculiarities in speech and customs. Those of the *Sám Yup*, coming from the immediate vicinity of Canton, are superior in education and intelligence to the people of the *Sz' Yup*, districts poorer and less fertile than those nearer to the Provincial Capital. It is among the latter class, who largely outnumber the others, that the order of the *I hing* is recruited. A simple-minded people, usually from remote agricultural districts, they have passed their early life in extreme ignorance and poverty. When they come to America they are not unwilling to join a powerful society of their countrymen, through which they are promised protection against the oppression of their own people and the terrors of a foreign land. Little thought of sedition or opposition to Tartar dominion fills the mind of the average emigrant; he is only anxious to obtain the small sum of money regarded by him as a fortune, and return home to pass the rest of his life peacefully with his children around him.

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* The Philadelphia lodge has since taken the name of the *Sún I T'ong*, and has a handsomely furnished hall in the second-story of a house on Race Street.

The *I hing* professes to such new arrivals and to the world at large to be a beneficial society. All members are brothers, relieving each other in distress and aiding each other in business and every laudable enterprise. If a member is ill, the society will help him; if travelling, he has only to call upon his brother, who will entertain him free of charge; if in trouble before the law, brother members must bear false witness, if necessary, to clear him. Means of revenge, dear to the Chinese heart for real or fancied injuries, may in some cases be not the least of its attractions.

Sunday, a holiday with the Chinese in America, is selected as the day for the assemblies of the brotherhood. None but members and candidates for admission are permitted to enter the meeting-room, where much ceremony is observed. The chief or head man is said to sit behind a table with a secretary who records his decrees, while ranged around are his lieutenants and the officers of the fraternity. These formalities are said to simulate those of a petty Chinese court of one of the earlier dynasties. It is before this tribunal aggrieved members lay their claims for redress. The constant quarrels arising over the gambling-tables, the family fights and feuds carried down for generations at home are here revived, not always for peaceful settlement, it is to be feared, but for revenge, sometimes even to the death. Those who incur the displeasure of the order are often made to feel its power, and there is reason to believe that cases have occurred where the fear of the American law was not sufficient to deter the agents intrusted with its supreme commands from even murdering their offending countrymen. The initiation of new members is said to be conducted with much solemnity. The candidates, dressed in long new cotton robes, instead of the usual short Tartar tunic, are required to answer a series of questions according to a prescribed ritual. "Have you a father?" asks the catechist. "No!" the novice must reply. "Have you sisters?" "No!" "Brothers?" "Only my brothers the Patriots." Every social relation must be forsworn and eternal fealty pledged to the brotherhood before an altar on which is some burning incense and a drawn sword, the latter indicative of the fate awaiting him should he break his oaths. The new member now receives a book, a bulky Chinese volume in which are contained instructions for secretly making himself known to fellow-members and a vocabulary of the secret language, by means of which he can carry on conversations quite unintelligible to the outside Chinese world. Immemorial custom among the Chinese has prescribed the exact manner in which they perform almost every action of their lives, the slightest variations from traditional usage, whether in eating, drinking, smoking, or manner of wearing their dress would be noticeable, and such slight variations are made to serve as fraternal signals among the *I hing*. Lifting the cup with the thumb and two fingers, or shaking it thrice over the bowl when drinking are among the many methods employed. To advance one foot within the doorway of a house, leaving the other without and place an umbrella on the sill is a signal for assistance given by a fugitive from the officers of the law.

The secret language or slang is formed by substituting one Chinese word or phrase for another in a manner laid down in the vocabulary.

The following words have been related to me by non-members of the society, many of whom are more or less familiar from hearsay with its history and ritual:

kang sha, to plough sand;	for ***shik fán***, to eat rice.
mò kwa, hairy squash; ***pak kwa***, white cucumber; ***tung kwa***, pumpkin;	" ***ch'i yuk***, pork.
kam kwa, yellow pumpkin;	" ***shiú chü***, roasted pork.
chung fung,	" ***fán shü***, sweet potatoes.
ká wo,	" ***tsau***, wine.
hung shun,	" ***yau***, oil.
kán, a slip of bamboo;	" ***fái tsz'***, chopsticks.
ling,	" ***ún***, bowl.
kwá tsz', melon seeds;	" ***pak ngan***, silver money.

ch'ün sam, pierced in middle; for *ts'ín*, cash.
tsau shá, crape; " *tái tò*, sword.*

The book, which may not under any circumstances be shown to outsiders, is sold to the new members for five dollars.

The initiation fee varies in amount according to the means of the candidate, and is devoted to paying for the dinner that invariably follows the ceremony. In Philadelphia it is usually about $20. Besides this fee the members are usually assessed from $25 to $100 in the course of a year. Large sums of money are frequently collected for the defense of members who have come within the province of the law while acting in behalf of the society, or for the prosecution of outsiders who have offended it. Subscriptions are also made to defray the funeral expenses of deceased brothers, and four times or oftener during the year dinners are given by the society at one of the Chinese restaurants at an expense of from two to five dollars for each member. Money is raised as wanted and no considerable fund appears to be retained in the treasury of the society. The ceremonials and observances of the *I hing* partake largely of a religious character, but their exact significance, owing to the secrecy generally observed, I have been unable to determine. Their feasts are usually held upon the birthdays or holidays set apart to Kwan Tí, Kwanyin, and *Om-to Fat* (Amitābha).

Romance and tradition inextricably interwoven dominate the minds of the Chinese who emigrate to America. Tales of fairies, demons, and genii, of priests, warriors, and necromancers drawn from the inexhaustible stores of their popular literature, amuse their leisure hours and somewhat lighten the burden of their heavy toil. It is from one of these histories or romances recorded in a book called the Shwui hú chuen that some of the Chinese here say that the plan of the present society is derived.†

The Shwui hú chuen purports to be an account of lives and adventures of a band of 108 chivalrous robbers, who lived on a mountain called *Léung Shan*, during the reign of the Emperor

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* These expressions closely agree with those given by Gustav Schlegel, *Thian Ti Hwui, the Hung-League, or Heaven-Earth-League. A Secret Society with the Chinese in China and India.* Batavia, 1866, p. 230.

† The Shwui hú Chuen, or "The Story of the Banks of the River," was written during the Yuen dynasty and is accounted as one of the ten masterpieces of Chinese popular literature. A translation of the prologue, with a synopsis of the contents of the first thirty-four chapters is given by M. Bazin in *Le Siecle des Youen.* Paris, 1850.

Cheh Sung (A. D. 1086—1101). They were pledged to secrecy and mutual support and drew to their ranks the outcast and disaffected from all parts of the country. For many years they successfully resisted all attempts to subdue them, devoting their lives to succoring the poor at the expense of the rich and oppressive officials whom they plundered. The supernatural plays an important part in the story. Witness the account of the origin of the band who lived on *Léung Shan:* "In the time of the Emperor Jin Sung (A. D. 1023–1064), a terrible epidemic ravaged the empire. Every effort to arrest its progress proved unavailing until at last the Emperor was advised to send an envoy to ask the assistance of the Grand Master of the sect of Tao, who lived on a mountain in Kiangsi called *Lung Fú Shan.* An imperial messenger was accordingly despatched who successfully fulfilled his mission. When about to return he observed a temple, the doors of which were securely sealed. He requested that they should be opened, but the abbott protested, and informed him that they must be always kept closed, as many evil spirits, which had been subdued by one of the founders of the order, were confined within the building. The officer, curious and incredulous, insisted, and the priest reluctantly saw the doors opened, when at once a blast of black vapor rushed out toward the sky, and the imprisoned spirits, 108 in number, escaped. They became incarnate and animated the 108 robbers who figure in the story."*

Of the political significance of the *I hing* it is difficult to speak with certainty. Opposition to the Manchus and the re-establishment of the Chinese dynasty of the Mings form part of its propaganda, but how far those political objects are lost sight of in the mere local and personal advantages resulting from confederation, as well as the relations of the *I hing* with the parent society in China, is difficult to determine. There is little discussion of Chinese politics among the people here, and few know or care about anything that concerns their country beyond the village in which they were born. Occasionally one hears revolutionary talk, but the better class of immigrants, who regard the secret order with hatred and contempt, express themselves well satisfied with the present government, and deplore all attempts to revive here an agitation from which many of them have suffered so bitterly in the

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*I have since learned that a story is current among the Chinese here with reference to the origin of the *I hing* similar to that related by Schlegel. *Thian Ti Hwui*, p. 7.

past. Continued residence in America, however, with increased knowledge of its political institutions and the personal liberty and freedom from official oppression enjoyed here are likely to influence even their ideas in favor of a more popular form of government, and the *I hing*, nursing the spirit of discontent, may some day play no unimportant part in the revolution, political and social, which contact with foreign civilization must inevitably bring about in China.

President Brinton gave an account of the early native coinages of America, referring to the copper coinage described by Ixtlilxochitl as the only instance of such coinage being recorded by the chroniclers.

DECEMBER 1ST.

The Rev. Dr. Joseph F. Garrison read by appointment a paper entitled "Some thoughts on the structure and character of the collection of Finnish Folk-Songs, the Kalwala, with some specimens of their contents." In the discussion that followed Mr. Law called attention to water being referred to in the Kalwala as the first element, as in the myths of the Greeks.

Mr. John R. Baker exhibited a copper coin bearing marks of what appeared to be aboriginal workmanship, said to have been found in a caché on the Pacific coast.

1888.

JANUARY 5TH.

A paper by Mr. Robert Noxon Toppan, of Boston, on "Early Printing," was read.

Mr. Thomas Hockley exhibited a proof-set of the English coinage struck to commemorate the Queen's Jubilee, and Mr. Isaac Myer, two handsome bronze medals of David Sears, of Boston, a descendant of Richard Sears, the Pilgrim.

FEBRUARY 3D.

Mr. Philip H. Law read a paper entitled "A Review of Tynne Morrison's Book of Travels. London, 1617."

MARCH 1ST.

Mr. Francis Jordan read by appointment a paper entitled "Aboriginal Ceramic Art of the New England and Middle Atlantic States," in which he claimed a greater antiquity for the pottery in question than for that of the mound-builders of the Mississippi Valley. "The only authority for the belief that the latter antedates the former," he said, "is based on Indian tradition. Perfect specimens of pottery from the Atlantic States are rare. Within two years the National Museum at Washington did not contain a single unbroken vessel. The largest number so far, some nine or ten very beautiful examples, were taken from Indian graves near Wilkesbarre. These, both in form and decoration, show a surprisingly high order of artistic workmanship. New England has only contributed four specimens to the pottery of the Eastern States.

"In Delaware, where there are evidences of a prehistoric population more dense than in any other of the Atlantic States, and where remains of ancient encampments are visible on nearly all the waterways, with abundance of fragments of earthenware, a whole vessel has never been found. On the Atlantic coast, where an Indian grave has no visible existence, its discovery is one of chance, and generally made by the plow, a medium very apt to destroy the mortuary pottery, should there be any. The potters of this section made no attempt to imitate the human frame or that of birds or animals.

"So far as can be ascertained, the entire number of perfect specimens in private collection and in museums, that have an Eastern origin, will not exceed twenty-five."

APRIL 5TH.

Mr. Tatsui Baba exhibited the lock of a Japanese matchlock and explained its mechanism. This curious arm, he stated, was called a *ju momme*, from the weight of the ball, which was ten *momme*, equivalent to about one and one-fifth ounces, and was introduced into Japan by the Portuguese about the year 1553, and continued in use down to the reorganization of the Japanese army by the Shogun in 1868. A heavier weapon, for which a lock similar to the one exhibited was used, was introduced about fifty years later than the *ju momme*. It was known as the *hiyaku me*, the weight of its ball being 100 *momme*, or about twelve ounces. This gun was carried by foot-soldiers and fired from a rest. Large cannon were first introduced into Japan about the year 1650.

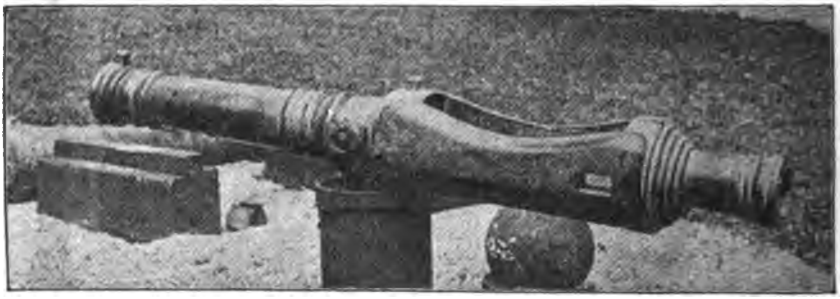

FIG. 2.

Mr. Culin exhibited a photograph, obtained through the courtesy of Colonel A. C. M. Pennington, 4th Artillery, U. S. A., of a Chinese breech-loading cannon now in the collection of trophy guns at the Artillery School, Fortress Monroe. This interesting weapon was captured in Corea in 1861 by the squadron of Rear-Admiral Rogers. It is a bronze wall-piece, with a calibre of 1.44 inches. The barrel is

18.62 inches long, and the breech-loading cavity 10.04 inches. Upon one side of the breech is an inscription composed of 51 Chinese characters of an ancient style, a copy of which was exhibited to the Society. This inscription gives the name of the official superintending the casting, of the officer of the artillery department, of the District Magistrate, and of the smith who manufactured the gun, together with its official designation, "4th class *fu ran chi*, number 194," and its weight, 100 catties, or about 133 pounds. The date is inscribed as the *kwei ch'au* year, 8th month, — day, but as the characters *kwei ch'au* only indicate a particular year, the fiftieth, of the cycle of 60 years, and no regnal period is given, they are not sufficient to fix the age of the piece. The Chinese Minister, in a communication to Secretary Bayard under date of July 26th, 1886, states that the titles of the military officials upon the casting are those created during the Yuen dynasty, during which the year indicated by the cyclical characters corresponded with A. D. 1312, a date more remote than has hitherto been accorded to such firearms.

Father Amiot, in *L'Art Militaire des Chinois*, illustrates and describes a breech-loading gun somewhat resembling in its construction the piece at Fortress Monroe. This gun, which he naïvely says may be given any name which will best designate it, is supported on a wooden stand resembling a tiger. Its length, exclusive of a wooden stock, is three feet eight inches, with a circumference of eight inches. Four boxes of iron accompany the gun, and these are alternately charged, inserted in the breech, and fired by the five men who serve the gun in action. These boxes are seven inches in length, five and one-half inches in circumference, and have a calibre of one inch. No great antiquity is ascribed to this piece, as it is said to have been first used in the third year of Yungching—that is to say, A. D. 1725. From this and other illustrations drawn from Chinese sources, Mr. Culin expressed the opinion that the gun belonged to a comparatively recent period.

Colonel John P. Nicholson presented the bronze medal of St. John's Commandery, No. 4, K. T. Semi-centennial, June 15th, 1869.

APRIL 19TH.

At a stated business meeting of the Society held this evening, the following amendments to the By-Laws were adopted:

Chapter I, Article VI.—Strike out "January" and insert "*December.*"

Chapter VI, Article I.—Strike out "January" and insert "*December.*"

Chapter VII, Article I.—Strike out "January" and insert "*December.*"

Chapter VIII, Article I.—Strike out all after the words "and December," and insert in lieu thereof, "*at such time and place as the Society may from time to time determine.*"

Chapter VIII, Article IV.—Strike out all after the words "7, antiquities and coins exhibited," and in lieu thereof,

8. *Retirement of visitors and strangers.*
9. *Reports of officers.*
10. *Reports of committees.*
11. *Nominations.*
12. *Elections.*
13. *Unfinished business.*
14. *New business.*
15. *Adjournment.*

The order of business at any meeting may be changed by unanimous consent of the members present.

Chapter IX, Article II.—At the end of the Article add, "*But no amendment to the Constitution or By-Laws shall be voted upon unless one week's previous notice of the proposed action on such amendment has been sent to each resident member.*"

MAY 3D.

A paper by Prof. James D. Butler was read, entitled "Judas and his Shekels."

OCTOBER 4TH.

President Brinton read a paper entitled "The Stone Age in Spain."

Mr. Culin made another communication with reference to the Chinese breech-loading cannon at Fortress Monroe, in which he stated that the characters *fu ran chi* on the breech simply designated it as a *Frangee*, or Frank gun, and that the titles of the military officials of the Yuen dynasty upon which the opinion as to its remote antiquity was based, were still used, on the eminent authority of Mr. Satow, in Corea where the gun was captured. These facts, with those already elicited, were considered by Mr. Culin to establish a comparatively modern period for the gun.

The historiographer, Mr. Isaac Myer, read a memoir of the late Philip Howard Law, Librarian of the Society, whose death occurred in Philadelphia on the 22d of May, in the 50th year of his age, and of the late Robert Coulton Davis, Curator of Numismatics, whose death occurred in Philadelphia on the 24th of August, in the 66th year of his age. Mr. Davis had filled the office of Curator of Numismatics since 1874.

Mr. Culin presented an argillite lance-head of the type described by Dr. C. C. Abbott as Eskimo, found at a depth of about three feet in the clay near Hainesport, N. J.

NOVEMBER 1ST.

Mr. Culin read by appointment a paper on "The Oriental Institute, Woking, England." This institution, which consists of a museum, college, and free guest house, is designed by its founder, Dr. G. W. Leitner, for the free education of high caste East Indians under conditions that will enable them to preserve their religious or caste usages, and return home without loss of position or influence among their countrymen. In addition to the main hall of the college, which occupies the building originally erected for the Royal Dramatic College, there is a residence for the Indian students, constructed on the design of a modern Indian house, and a handsome mosque is in course of erection for the Mohammedans.

The museum contains the enormous collections formed by Dr. Leitner in the East, which are arranged to illustrate the arts, manufactures, antiquities, and ethnology of India, and especially the little known trans-Indian regions, many of which were first explored by Dr. Leitner himself. Notable among these is a collection of sculptures called by their discoverer "Græco-Buddhistic," through which can be traced the influence of Greek upon Indian art. The ethnological collections from Dardistan and Thibet are especially fine, and include manuscripts, among which is a block-printed copy of the Kanjour, with beautifully illuminated miniatures. The publication of works by native Indian authors forms part of the contemplated work, and a Sanskrit journal has already appeared. This institution promises to furnish an important link between European and Eastern Orientalists.

A communication was read from Rev. Dr. W. M. Beauchamp in which he said, "Since I wrote last I have added to my stock of Indian brooches and have made drawings of many more. They were once very abundant at Onondaga and of large size, but when the price of silver went up during the war, the brooches, etc., went up, too. I have had several small double-crosses, all from one woman, and some heart and leaf-shaped patterns which I had not seen before. Ju-ne-gant-ha—*i. e.*, 'The tribe is very large'—made these at Onondaga less than fifty years ago, as others did elsewhere. He used a small anvil on which he commonly hammered out coins and shaped and ornamented them. Out of a dime he might form a brooch that would bring twenty-five cents, and others in proportion. He used a set of patterns for tracing the designs, and punches and chisels for cutting and ornamenting. His greatest difficulty was in cutting colored glass for earrings, but these were also neatly made. They are all still plentiful among the Senecas, but the Tuscaroras have had but few in this century at least. Being Christians may have made a difference with them, as few Christian Onondagas have any worth mentioning. The taste for silver ornaments is noted by Loskiel, and arose early in the last century. Before A. D. 1700 the *metallic* ornaments and implements of the Iroquois were universally brass, bronze, and copper."

A letter received through Mr. Dalton Dorr from Mr. Charles R. Baker, of Pittsburgh, Pa., giving an account of an Indian stone-pipe offered for sale in that city was read. It was described as being made of steatite, in the form of a bird's body, with a human head, and weighing between thirty and forty pounds, and was said to have been found in Alabama. From the sketch that was submitted President Brinton was inclined to regard it as Cherokee work and of comparatively recent manufacture.

A letter from Gen. C. W. Darling, Utica, N. Y., was read, stating that the compass and chain with which the city of Philadelphia was surveyed and laid out was in the possession of Mrs. J. L. Howell, of Georgetown, D. C., who wishes to dispose of it.

1889.

JANUARY 3D.

President Brinton delivered his annual address, giving "Proto-Historic Glimpses of Europe."

A collection of terra-cotta heads and other objects from San Juan Taotihuacan, Mexico, were exhibited by Dr. Edward S. Vanderslice.

FEBRUARY 7TH.

Mr. Isaac Myer read by appointment a paper entitled "The Prophet Jonah," of which he gave the following abstract:

"The Book of Jonah is one of the strangest of the Old Testament, and has exceedingly puzzled theologians and expositors of the Bible. It is composed of two fragments, one of the fish, and the other, of Nineveh and the gourd. Exoterically Jonah is the first prophet of the Gentiles, yet the Hebrew religion was not a missionary one, and he tries to fly from the presence of Jehovah, which, as a prophet and a Hebrew, he must have known was impossible. There are may other statements in the exoteric account which seem absurd, but are not so when we understand the esoteric meaning. For instance, when he tells the sailors to make a human sacrifice of him to the sea, when sortilege is practically indorsed, when he prays in the belly of the great fish, and, after three days and nights, is vomited out upon dryness.

"The greatest difficulty met with by theologians has been the fish, frequently and incorrectly translated, whale. Some writers have considered the entire account as a solar myth; others that the whale was a great dragon, and that his enormous mouth was a symbol of the entrance of the soul into purgatory, from whence it was afterwards spit out on the dry land of heaven, above the waters of the firmament.

"From the citations in Matthew xii, 38–41, and Luke xi, 29, 30, 32, the subject is of special interest to Christianity, and is one frequently portrayed on the walls of the Catacombs at Rome by the early Christians.

"The Kabbala gives us the meaning as a most beautiful allegory: Jonah means 'a dove,' which was an ancient Hebrew emblem of the spirit, and had a reference to divine light, and also held a high place among most of the ancient heathen peoples, being especially sacred to the great vivifying deities, such as Astarte, Isis, and Juno.

"The explanation, found in the Book Zoar, is that the soul of man descends like a dove from the upper treasury at the command of God and against its wish, and enters into the ship, the human body, which sails in the great sea of the universe. The sailors are the other senses of the body, and the man goes into the tainted body as into a ship which is nearly broken. He thinks when he sins he can flee from the presence of Jehovah; but this is not possible. Then the sentence of judgment, a mighty storm wind, rises against him, and he is caught by it when fast asleep (in his soul) in the cabin. The shipmaster (his conscience) tries to awaken him, and warns him to prepare for the future, and tells him of his origin, and that he must return to earth, and that judgment is asked against his soul for his conduct. Finally they carry him to the grave, or *sheol* (the great fish), and throw him into it. He is judged for three days, and his body decomposes and remains in the grave until the time when God shall awaken the dead. This will happen when the Angel of Death shall be removed from the world, and that is at the time of the Messiah, 'who will swallow up death in victory.' Then He will speak to the fish and it will vomit Jonah on the dryness."

MARCH 7TH.

Mr. Thomas Hockley exhibited a marble bas-relief figure about 15 inches in height, which he purchased the preceding summer at the Grand Bazaar at Constantinople. It was unfinished at the back and had apparently been used for mural decoration. The figure held a tablet about three and a half inches in height, bearing an incised inscription, of which a reversed copy is given in Fig. 3.

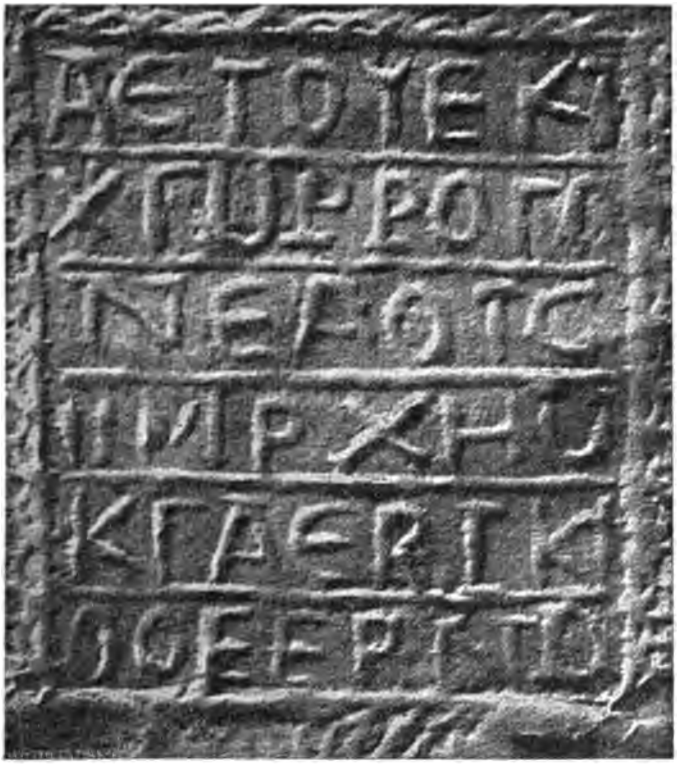

Fig. 3.

April 4th.

Mr. Henry Phillips, Jr., exhibited a photograph of a coin dug up at Toledo, Ohio, six feet under the natural surface of the ground, where it was found with a flint arrow-head, but no other human remains. Mr. Phillips stated that it was a piece of Antoninus Pius struck at Alexandria. It appeared from the photograph to be in very perfect condition.

May 2d.

Mr. Benjamin Smith Lyman read by appointment the following paper entitled

AN OLD JAPANESE STANDARD FOOT MEASURE.

On the fourth of April, 1873, at the Treasury Department of the Japanese government, an old standard measure of length, called the Tsuchimikadoshaku, also more vulgarly called the Tesshaku, or iron foot, was shown to me. It was a bar of iron about half an inch, or five-eighths, thick and sixteen inches long and two inches and a quarter wide, but hollowed out into the shape of a narrow link, widened a little for about three inches at one end and five-eighths of an inch at the other end, as shown by the accompanying drawing roughly copied from it. The bar contains three standards of length, measured between certain interior angles of the link.

It is another of the numerous cases where an opposite method is adopted in the extreme East to what a European or American would consider the most natural one:—instead of using a simple bar as a standard, the space inside the hollow of a link is taken. Although we are apt thoughtlessly to condemn the ways of others as ridiculous and less practical or advantageous than our own, it often happens that the Oriental method, if the choice be not wholly a matter of indifference or of chance, is in reality more rational and better suited to the circumstances of Eastern countries. In the present instance, the method chosen is not without some arguments in its favor. A simple bar as a standard of length is subject to change from the wearing off of its ends, especially at the corners, either in use or in the rubbing to which it may be exposed in the course of centuries, even if it be, with additional complication, ordinarily preserved in an outer protecting case. On the other hand, a standard length taken between the inner angles of a link can with moderate care, never become shortened in time, and is little liable to any alteration either from legitimate use or from accidental wear. The iron link is itself a strong and inseparable protector around the standard. The weight of the arguments for invariableness, security, simplicity, and practicalness seems then, after all, to be on the side of the Orientals in this case.

As shown by an inscription on the bar, or link, it dates back to the year 1047 of our era. The inscription says:—"Human king, seventieth reign, Tegai, Eishoo second year first month — day." Tegai is the name of the year according to the sixty-year cycle, and Eishoo, meaning endless reign, is the name of the first period in the reign of the Japanese ruler Goreizei. The bar is said to have been brought at that time from China to serve as a standard of measures; but as it goes by the name of Tsuchimikado, the Japanese ruler from A. D. 1199 to

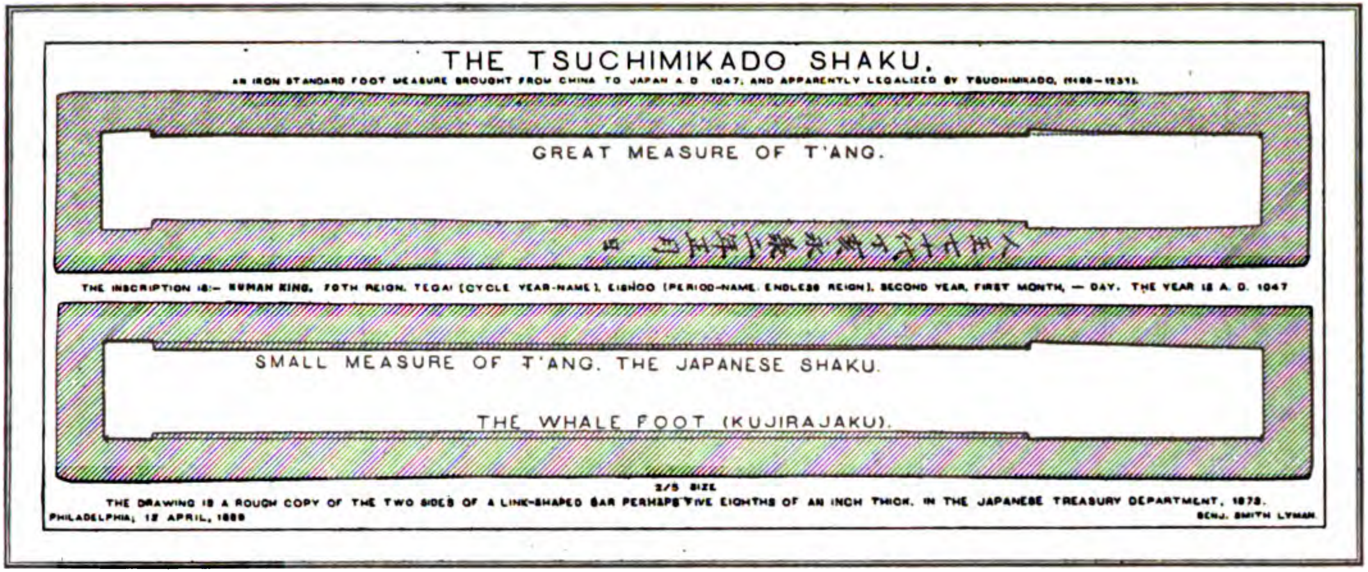
THE TSUCHIMIKADO SHAKU.
AN IRON STANDARD FOOT MEASURE BROUGHT FROM CHINA TO JAPAN A. D. 1047, AND APPARENTLY LEGALIZED BY TSUCHIMIKADO, (1198—1231).
GREAT MEASURE OF T'ANG.
人王七十代丁亥永承二年正月　日
THE INSCRIPTION IS:— HUMAN KING, 70TH REIGN, TEGAI (CYCLE YEAR-NAME), EISHOO (PERIOD-NAME, ENDLESS REIGN), SECOND YEAR, FIRST MONTH, — DAY. THE YEAR IS A. D. 1047
SMALL MEASURE OF T'ANG. THE JAPANESE SHAKU.
THE WHALE FOOT (KUJIRAJAKU).
2/5 SIZE
THE DRAWING IS A ROUGH COPY OF THE TWO SIDES OF A LINK-SHAPED BAR PERHAPS FIVE EIGHTHS OF AN INCH THICK, IN THE JAPANESE TREASURY DEPARTMENT, 1878.
PHILADELPHIA, 12 APRIL, 1889
BENJ. SMITH LYMAN.

Plate 4.

1231, it was probably not legalized or enforced as a standard until 150 years after it had arrived in Japan. Or possibly Tsuchimikado, the name of a noble family, may have been the name of the ambassador who brought the bar from China.

It is said that the length, on the face that bears the inscription, from the inner angle of the link at the longer widening, but at the corner furthest from the inscription, to the nearest corner of the shorter widening is the standard for the "great measure of T'ang," the country and dynasty that ruled in China from A. D. 620 to 907. The standard for the "small measure of T'ang," is upon the other face of the bar, and is the distance from one extreme angle of the shorter widening of the link to the nearest corner of the larger widening. The "whale foot," as it is called in Japan, is the full length of the link on the same face of the bar from the other extreme inner angle of the shorter widening to the furthest angle on the same side of the link.

The shorter or small measure of T'ang is about one-sixteenth of an inch shorter than the English or American foot and is the same as the ordinary foot of Japan at the present day, except that for the past 165 years the length of the common foot measure has been regulated by another standard called the Kiyoohooshaku, which, according to a brass copy of it in the Japanese Treasury Department, is, it is said, about a thousandth of a foot shorter than the Tsuchimikado standard. The Kiyoohooshaku is said to be probably like the present bar, in form and material, and was established as a standard by the Shoogun Yoshimune (1716–1745) from some measure in the Kumano temple at Honguu (or possibly Shinguu) village in the province Kii, some 60 miles south of Osaka. Kiyoohoo is the name of the period A. D. 1716–1735. Still another standard of the common foot measure, called the Matashiro standard, is kept at the Osaka mint; but according to a brass copy of it in the Treasury Department, is, it is said, about four-thousandths of a foot shorter than the Kiyoohooshaku. Within the last few years the mean of these two standards has been adopted for the foot. The common foot of Japan is called kanejaku, or the foot of the carpenters' square, which is called magarikane (bent metal), or more shortly kane (metal.)

The "great measure of T'ang" is one-fifth longer than the small one, or the common foot, kanejaku; and appears to have been used for measuring land, and is also the Japanese gofukujaku for cloth measuring, but is no longer used in Japan. The whale foot, or kujirajaku, is one-quarter longer than the common foot, or kanejaku, and is now used in Japan for measuring cloth. The name is said to be given because the measure is often made of bone from a whale's fin; and not, therefore, because of the extreme size of the measure.

The measures of T'ang appear to have been introduced into Japan in consequence of intercourse between the countries that became frequent about the beginning of our seventh century, and to have been established by law about A. D. 713, just at the beginning of the strictly historical period, displacing a Corean foot that is said to have long been in use and to have been about one-fifth longer than the kanejaku; and before that, spans and hand-breadths are said to have been used. (See Gakugei Shirin, vol. IV, p. 220.) In A. D. 713, 717, and 720 laws are by the same authority said to have been made in regard to weights and measures, based on those of T'ang; and standard measures and weights to have been distributed to the provinces. It is clear that, even in those days, the Japanese with their remarkable appreciation and docility, were ready and eager to adopt from the most enlightened foreign countries the results of the best civilization known to them.

Indeed, it may well be questioned whether better enlightenment could have been found anywhere in the world at that time than in China. In the matter of standard measures,—and perhaps there is no better single test of the enlightenment of a country than the precision and uniformity of its measures and weights,—the foot measure of the T'ang dynasty, and presumably the one already long used in the country T'ang, was far from new, and is in fact claimed to be the same as the one established by the Shang dynasty, some 3000 or 3500 years ago (B. C. 1766–1122). The Shang foot is said (Wakansan-saidzue, vol. 24, p. 2) to be just one-fourth longer than the foot of the previous Hia dynasty, the first thoroughly historical dynasty, about four thousand years ago (B. C. 2205–1766); and from that time to the present the Chinese foot has always been divided into tenths and hundredths, a decimal division of measures that does not even now date back a hundred years in any part of Europe, though our decimal arithmetical notation has been a special European, but not Chinese, argument in its favor for nearly a thousand years. In the more or less fabulous period before the Hia dynasty the foot is said to have had the same length as the Hia foot, but to have been divided into ninths and eighty-firsts, as far back as Hwangti, 4500 years ago (B. C. 2697-2597). It is claimed that by his command his musician Ling Lun made the first standard of length from a joint of bamboo that when used as a pitch pipe gave forth a certain note. The contents of the pipe also served as the base of measures of capacity, and so too of weights. The idea of taking a pitch pipe as a standard of measure may seem fanciful and more poetical than practical, but certainly compares favorably with the origin of our own standard measures, the length of the king's arm about 800 years ago. It bears some resemblance, moreover, to the very modern project of taking for a standard the length of a wave of light of a certain color.

It is reasonable to suppose that a people whose government was solicitous about a uniformity of weights and measures should be in other respects somewhat advanced in civilization. We find, indeed, that in the peaceableness and justice of the government, in the freedom of the people from government oppression while pursuing happiness, in the safety of property and life, in the orderliness and decorum of the average behavior of the public, in the loftiness of moral ideas, purity of religion, freedom from degrading superstitions, morality of the priesthood, literary and artistic taste and skill, industry, agriculture, commercial integrity and enterprise, bodily comfort, in every one of these important things the Japan of 1047, the epoch of this standard foot measure, was at least on a par with the Europe of the same time and in many of them decidedly more advanced. For that was the moment when Europe was more deeply sunken than at any other in the ignorance, superstitions, vice, lawlessness, rudeness, and poverty of the Dark Ages. Indeed, if we should go much further back in China and compare its condition in all those respects with Europe we should constantly find the comparison highly favorable to the Orientals.

We must remember that the time of our foot measure just preceded the Norman conquest of England, when the Roman Church was at a low stage of corruption; the very Pope, Benedict IX, after being twice driven from the throne for scandalous conduct, had just been deposed for simony; all parts of Europe had long been almost constantly in a state of war; Henry III, Emperor of Germany, had just defeated the Bohemians and Hungarians, and claimed the right of nominating the Popes; Henry I, the weak ruler of France, was aided at first against his rebellious vassals by Robert the Devil, Duke of Normandy, and opposed by him later, and the kingdom was afflicted by many private wars and by a dreadful famine; England was ruled by "the good King Edward," the Confessor, but also torn by many dissensions; the usurper Macbeth was holding Scotland in spite of Edward's aid to Malcolm; in addition to the national and provincial wars, Europe was in a state of almost incessant private warfare; everywhere outside the protection of the Church "the strong hand was the only law;" chivalry was but just beginning its beneficent civilizing career, later to be improved by the intercourse with Asia that the Crusades gave rise to; in science and literature, according to competent critics, there had been for five hundred years only two men of real importance and originality; very few laymen, of any rank, could sign their own names, and the clergy were as a body little better educated; all Europe was beridden by the grossest superstitions, such as judicial ordeal and trial by combat; the vernacular languages of Southern Europe had scarcely been reduced to writing; expensive parchment was practically the only material to write on, and books were very rare; of the fine arts, ecclesiastical architecture was almost the only one in existence and the magnificent churches of the later Middle Ages were barely beginning to be built; successful commerce had but lately been established at Venice, Genoa, Dublin and on the Baltic; manufactures hardly existed at all, and merchandise could not be carried from place to place without great risk of robbery and certainty of subjection to extortionate tolls; the state of agriculture was very low indeed, with an almost inconceivably small extent of cultivated land, little fertilizing, and scanty crops; the morals of the wealthier part of society had become extremely dissolute, and the very numerous monks themselves were in general notoriously licentious; judicial perjury was prevalent; English parents sold their own children as slaves; bodily comfort was very inferior, especially among the richer classes, to what it is now, and elegance of dwellings or furniture or clothing was almost unknown; houses had no chimneys nor glazed windows, and carpets, glasses, plate, chairs and even bedsteads were rare for centuries later; after two hundred years of improvement, as late as the thirteenth century, in Italy, perhaps the most civilized European country, it is recorded that "manners were rude; a man and wife ate off the same plate; there were no wooden handled knives, nor more than one or two drinking cups in the house, candles of wax or tallow were unknown: a servant held a torch during supper; the clothes of the men were of leather unlined."

Nevertheless, it is obvious that in regard to all such points, except perhaps the moral ones, Europe is now greatly in advance of the Far East; and at an earlier period, too, during the best times of ancient Greece and Rome, the highest civilization of those countries seems to have been decidedly superior in many respects to the contemporaneous condition of China. We are led then, very naturally, to inquire why progress should have been so much more rapid in Europe during the past 800 years, and especially the last 400, as to cause the Orientals to be outstripped; and on the other hand why Europe should have fallen behind the East during the earlier part of the Middle Ages, so that China and even Japan in their more equable progress appear to have a great advantage at the time of our old standard foot measure.

The real secret of these striking differences between the East and the West at different periods seems to be that in the East the refinement of feelings, the gradual improvement of notions as to what is becoming and decorous behavior and conduct of life, that is, morality from the point of view of what looks well or has a pleasing outward appearance, is predominant as the foundation of civilization, rather than the by no means wholly wanting intellectual or logical cultivation, that in Europe has been at the base of the highest enlightenment of both ancient and modern times; though there not disunited from some degree of moral elevation, particularly through sensitiveness of conscience, an introspective comparison of one's own acts with what is known or felt to be true and right, a view never thought of in the Far East. Of course, a certain amount of morality, of orderliness of behavior between men and of peace between nations, induced either by common instinct, or by superstition, or by religion, or by reason, or by a combination of two or more of these guides, is a necessary condition for the progress of intellectual enlightenment. In addition, however, a special bodily temperament, somewhat inclined to reflection, is particularly favorable to the exercise and unfolding of the reasoning powers.

That thoughtful temperament seems to have prevailed in ancient Greece to a higher degree than in Eastern Asia, and to have led more or less directly to the Grecian preëminence in enlightenment, which was copied by the rather less reflecting, more volatile Romans. When the state of morals became low through the blunting of the natural instincts by luxury and through an enlightened loss of active faith in the ancient superstitions and religion, the Roman Empire fell gradually into disorder both in its national and private relations and became powerless before the rude northern invaders, who intensified its growing barbarism.

The new religion, Christianity, was not directly favorable to intellectual cultivation and enlightenment, nor did it specially desire to be so; though, on the other hand, it did not at first aim directly to oppose them. Its chief purpose was to rectify men's morality by persuading them with a new incentive to virtue; and thereby it prepared the way for a subsequent revival of learning and of intellectual refinement. The influence of the Church was, to be sure, not in theory or by deliberate intention directly opposed to intellectual progress, but for several reasons had practically that tendency. For the early Christians disliked and despised or distrusted pagan and secular learning and were perhaps, owing to persecutions, shut out from many of the ordinary facilities for acquiring it. St. Jerome, the most learned of the Latin Fathers, thought the study of secular books reprehensible; and a church council of his time (A. D. 398) forbade the reading of them. Many bishops, even, were totally illiterate. Then, too, it was perceived that the power and influence of the priesthood, when once they had become established, were more or less endangered by physical science through the weakening of faith in what were considered essential truths of direct revelation and the very bulwarks of the Church; and consequently every step of scientific progress has always been stoutly opposed by many of the clergy, down even to our own days, in spite of the fact that it has afterwards invariably come to be universally admitted that no such step has really been in any degree subversive of morality or opposed to the ultimate welfare of the human race.

The Gothic and other Teutonic northern invaders had never overcome the obstacles of their northern climate so far as to reach any high degree of civilization and were still rude barbarians. But they appear to have always had the reflective temperament and to have infused something of their own nature into the more southern and western countries; so that, when manners had become softened and regulated by the new religion, the progress of enlightenment by cultivation of the intellect, of the logical or reasoning faculty, was again taken up, and, though almost imperceptible at first and very slow for a long time, went on at length with increasing speed in spite of every opposing hindrance.

Until the latter part of the eleventh century, about the time of our foot measure, the decline of enlightenment had been almost constant for at least six centuries, until the lowest point of the Dark Ages was reached, and the Far East was then more civilized and enlightened than Europe. Since that time, a great improvement has been effected in Europe, but so little in the East, that its condition seems by comparison almost stationary. Nevertheless, there is doubtless some advance there, notwithstanding temporary fluctuations; though it has been said:—

> "Better fifty years of Europe than a cycle of Cathay."

The reason why Oriental progress in enlightenment has not been more rapid seems clearly to be found in the temperament of the Eastern races. As they are not greatly inclined to reflection, to reasoning, they do not so often as others elaborate great original ideas that are both the result of progress and the means of still better attainment and of accelerated advance. That kind of temperament or character of mind does not however belong in equal degree to all the races of Eastern Asia and pertains to the Japanese still more than to the Chinese. It carries with it the teachable appreciation that makes a people ready to adopt from others the important ideas it is unable or indisposed to work out for itself. The character in question is also particularly amenable to moral laws and civilizing influences.

The interchange between the two sets of races, then, is not unequal. The reflective ones can themselves reason out most valuable truths and far-reaching principles, but can profit immensely by the others' inestimable delicacy and highly refined perception.

OCTOBER 3D.

Mr. Francis Jordan, Jr., read by appointment the following paper, entitled

ABORIGINAL WOOD WORKING.

The Atlantic coast of North America has developed no depository, such as the remains of the lacustrine villages, upon which we can draw for examples of aboriginal wood working, and yet there is no doubt that wood was as important and indispensable to the aboriginal American as it is to us. However, the perfect specimens from the Atlantic seaboard are only ten or twelve in number, and these mostly rude and unimportant, have been recovered from submerged forest lands and ancient village sites and shell heaps, where the conditions have been favorable to their preservation. Hence there are many stone implements which cannot be accurately classified, through our ignorance of their relation to a handle or other wooden appendage, but it is not reasonable to suppose that the red man confined his use of a material so easily worked as wood to hafting weapons and domestic implements. It no doubt entered into numerous household forms which may have ceased to exist after contact with the whites, and it is equally probable that many of them were constructed with characteristic elaboration and attention to detail.

Perhaps one of the most interesting specimens is the dug-out canoe exhumed in 1845 from a swamp on the Savannah River, near the city of Savannah, a relic too well known to require a description.

Up to recent date the National Museum at Washington did not contain a single article, wholly of wood, of prehistoric origin, from the eastern coast. It has, however, a curious implement taken from a shell deposit on the coast of Florida, consisting of a shell of the pyrula species pierced by a wooden handle.

When found the latter remained in the socket, but all traces of the method by which it had been secured to the shell had disappeared. In the absence of a better classification this specimen is called a club, but appears well adapted for use as a water dipper.

A beautiful example of aboriginal wood carving, a small bowl, is in the possession of the library at Thomasville, Ga., where it was found several feet below the surface by some workmen engaged in sinking a well. This unique vessel was carved out of a solid block of curled black walnut of great density, and its exact, as well as graceful, proportions have been retained without any defined warp or crack. The general character of the bowl and the place of its discovery justify a claim to considerable antiquity. It is square, with slightly rounded corners, a polished surface and carefully excavated interior, and in design and finish would not discredit the performance of an experienced wood-carver, with all the modern appliances for carving at his command. The sides measure five inches long, three and a half inches deep and three-eighths of an inch thick, and the bottom is flat and smooth. It is decorated with two diminutive ears, too small to be of use, on opposite sides, close to the rim, the counterpart of those frequently seen on aboriginal earthenware. This peculiarity would have established the identity of the bowl at once had there been no other way of doing so.

Another addition to the small number of wood implements, of a ruder type, however, than the bowl, but of equal interest, is a paddle of undoubted prehistoric origin, taken from a shell-heap on a bank of the Choptank River, near Cambridge, Maryland, and now in the collection of Dr. J. L. Dawson, of Milford, Delaware.

This specimen is remarkable as being the only example of an entire paddle known to exist. Dr. Charles Rau figures one in his *Prehistoric Fishing in Europe and America*, which was extracted in a fragmentary condition from the mud of a creek on Long Island. He remarks in describing it, "I am not aware that other paddles have been found in this country under similar circumstances."

The Maryland paddle was discovered at a depth of three feet below the surface, imbedded in the moist débris of the deposit, to which, together with the fact that it was cut from indigenous live oak—a species of almost indestructible timber—it owes its preservation. It suffered some slight mutilation at the time of its discovery, but may be said to be perfect, save the encroachments of dry rot and the natural discoloration produced by age and exposure. It measures four feet two inches over all. The blade, which is four inches in its widest part, differs in shape from that of the conventional paddle, being long and narrow and terminating in a blunt point. While one side is oval, the other has been roughly worked flat, indicating that that side was obviously meant to be presented to the water.

There are other interesting features. As, perhaps, showing the means employed in shaping the paddle, there are charred spots on the blade and handle, and several well-defined incisions, such as a stone gouge would make.

The paddle referred to was exhibited and commented upon by the members present.

President Brinton stated that the ancient city of Constantine presented the richest numismatic field he had discovered in his recent travels, and he gave an account of the manner in which old coins are sold in the market-place by Arabs, who bring them in small pots, with country produce, from the fields in the neighborhood, where they are said to be found. At Carthage, he stated, no remains were visible of the ancient city except the water-tanks, which have been repaired and are still used for water.

The Corresponding Secretary read a letter from Padre Damaso Sotomayor, of Concordia, Mexico, with which were inclosed photographs of the Orizaba inscription.

Mr. Henry Phillips, Jr., read a communication entitled "Primitive Man."

NOVEMBER 1ST.

President Brinton read by appointment the following paper entitled

ON THE "STONE OF THE GIANTS."

At the last meeting of this Society a photograph was received of the *Piedra de Los Gigantes*, or "Stone of the Giants," now situated at Escamela, near the city of Orizaba, Mexico. It was obligingly forwarded by the Mexican antiquary, Father Damaso Sotomayor, and was referred by the Society to me for a possible interpretation of the figures represented.

The sender accompanied the envoy with a copy of a newspaper published in Orizaba, entitled *El Siglo Que Acaba*, which contained a lengthy interpretation of the figure by Father Sotomayor in accordance with the principles laid down in his recently published work on the decipherment of Aztec hieroglyphics.* The Father sees in the in-

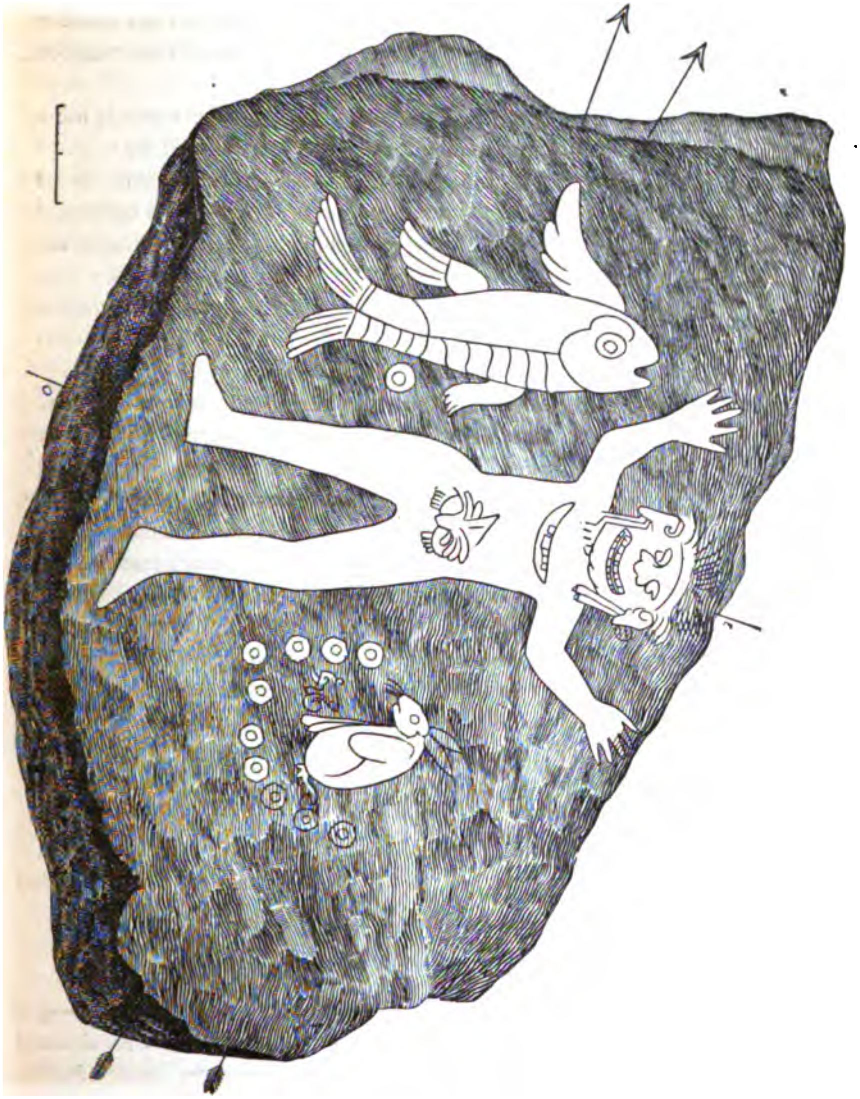

FIG. 4.—THE STONE OF THE GIANTS.

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* *Los Aztecas*, Mexico, 1888.

scribed figures a mystical allusion to the coming of Christ to the Gentiles, and to the occurrences supposed in Hebrew myth to have taken place in the Garden of Eden. As I cannot agree in the remotest with his hypothesis, I shall say nothing further about it, but proceed to give what I consider to be the true significance of the inscribed figures.

I should preface my remarks by mentioning that this stone is not a recent discovery in Mexican archæology. It was examined by Captain Dupaix in the year 1808, and is figured in the illustrations to his voluminous narrative.* The figure he gives is, however, so erroneous that it yields but a faint idea of the real character and meaning of the drawing. It omits the ornament on the breast, and also the lines along the right of the giant's face, which as I shall show are distinctive traits. It gives him a girdle where none is delineated, and the relative size and proportions of all the three figures are quite distorted.

Dupaix informs us, however, of several particulars which the Rev. Sotomayor omitted to state. From the former's description we learn that the stone, or rather rock, on which the inscription is found, is roughly triangular in shape, presenting a nearly straight border of thirty feet on each side. It is hard and uniform in texture, and of a dark color. The length or height of the principal figure is twenty-seven feet and the incised lines which designate the various objects are deeply and clearly cut. In the present position of the stone, which is the same as that stated by Captain Dupaix, the head of the principal figure, called "the Giant" lies toward the east, while the right hand is extended toward the north and the left toward the south. It is open to doubt whether this disposition was accidental or intentional, as there is reason to believe that the stone is not now in its original position, or not in that for which it was intended.

Along the base of the stone, which is in thickness some five feet, at the feet of the giant, there are a series of figures inscribed which are now almost obliterated; at least, the photographs sent the Society give no clear idea of them, and the cuts of Dupaix are plainly for the most part fanciful. Their presence there, however, prove that the block was not intended to have been set up on edge or inserted vertically into a wall, as either of these arrangements would have obscured these hieroglyphs.*

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* Dupaix, *Antiquités Mexicaines.* 1st Exped., p. 7; Pl. vi, vii, fig. 6, 7. At that time the flat surface of the rock was the floor of a cabin built upon it. At present the cabin has d sappeared. Mr. Bandelier does not seem to have visited this stone when he was at Orizaba, although he refers to Dupaix's explorations. *Report of an Archæological Tour in Mexico in* 1881, p. 26 (Boston, 1884). Nor does M. H. Strebel, though he also refers to it, give any fresh information about it. See his *Alt-Mexiko,* Band I, s. 30.

I now approach the decipherment of the inscriptions. Any one versed in the signs of the Mexican calendar will at once perceive that it contains the date of a certain year and day. On the left of the giant is seen a rabbit surrounded with ten circular depressions. These depressions are the well-known Aztec marks for numerals, and the rabbit represents one of the four astronomic signs by which they adjusted their chronologic cycles of fifty-two years. The three others were a house, a reed, and a flint. Each one of these recurred thirteen times in their cycle, making, as I have said, a term of fifty-two years in all. A year was designated by one of the four names, with its appropriate number; as "3 house," "12 flint," "4 reed," etc., the sequence being regularly preserved.

The days were arranged in zones or weeks of twenty, the different series being numbered, and also named from a sequence of eighteen astronomical signs, named "wind," "lizard," "snake," "deer," etc. The five days lacking to complete 365 were intercalated. A second, or ritual, system had thirteen weeks of twenty days each, but as thirteen times twenty makes only 260, in this computation there remained 105 days to be named and numbered. Their device to accomplish this was simple. They merely recommenced the numbering and naming of the weeks for this remainder, adding a third series of appellations drawn from a list of nine signs, called "rulers of the night." At the close of the solar year they recommenced, as at the beginning of the previous year.†

With these facts in our mind we can approach our task with confidence. The stone bears a carefully dated record, with year and day clearly set forth. The year is represented to the left of the figure, and is that numbered "ten" under the sign of the rabbit, in Nahuatl, *xihuitl matlactli tochtli;* the day of the year is number "one" under the sign of the fish, *ce cipactli.*

---

* One appears to be a gigantic full face; another an animal like a frog, with extended legs; two others are geometrical designs, the outlines of which have evidently been recently freshened with a steel implement. Future observers should be on their guard that this procedure shall not have mutilated the early workmanship.

† It is needless to expand this explanation of the Aztec calendar; but it is worth while to warn the student of the subject that the problem is an intricate one and has never yet been satisfactorily solved, because the information presented is both incomplete and contradictory. I consider the most instructive discussion of the calendar is that in Orozco y Berra, *Historia Antigua de Mexico*, Lib. IV, Cap 1–6.

These precise dates recurred once, and only once, every fifty-two years, and had recurred only once between the year of our era 1450 and the Spanish conquest of Mexico in 1519–20. We may begin our investigation with that one epoch, as from other circumstances, such as local tradition * and the character of the work, it is not likely that the inscription was previous to the middle of the fifteenth century. Within the period named the year "10 rabbit" of the Aztec calendar corresponded with the year 1502 of the Gregorian calendar. It is more difficult to fix the day, as the mathematical problems relating to the Aztec diurnal reckonings are extremely complicated and have not yet been satisfactorily worked out, but it is, I think, safe to say that according to both the most probable computations, the day "one fish" (*ce cipactli*) occurred in the first month of the year 1502, which month coincided in whole or in part with our February.

Such is the date on the inscription. Now, what is intimated to have occurred on that date? The clue to this is furnished by the figure of the giant.

On looking at it closely we perceive that it represents an ogre of horrid mien, with a death-head grin and formidable teeth; his hair wild and long, the locks falling down upon the neck. Suspended on the breast as an ornament is the bone of a human lower jaw, with its incisor teeth. The left leg is thrown forward as in the act of walking, and the arms are uplifted, the hands open, and the fingers extended as at the moment of seizing the prey or the victim. The lines about the umbilicus represent the knot of the girdle which supported the *maxtli*, or breech-cloth.

There is no doubt as to which personage of the Aztec pantheon this fear-inspiring figure represents. It is *Tzontemoc Mictlantecutli*, "the Lord of the Realm of the Dead, He of the Falling Hair," the dread god of death and the dead.† His distinctive marks are there, the death head, the falling hair, the jaw-bone, the terrible aspect, the giant size.

There can be no question but that the *Piedra de los Gigantes* establishes a date of death; that it is a necrological tablet, a mortuary monument, and from its size and workmanship that it was intended as a memorial of the decease of some very important personage in ancient Mexico.

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* Father Sotomayor, in the newspaper account above referred to, states that tradition assigned the inscription to the time of Cortes' march to the City of Mexico; a date which he quite properly ridicules as impossible. The vicinity of Orizaba was, moreover, not a part of the Mexican State until some time after the middle of the 15th century. See Bandelier, *Archæological Tour in Mexico*, pp. 22, sqq.

† *Tzontemoc*, a compound of *tzontli*, hair, and *temoc*, to fall; *mictlan*, a locative from *mictli*, to die; *tecutli*, lord, noble. For a description of this deity see Sahagun, *Historia de la Nueva España*, Lib. III, Appendix, chap. I. I have elsewhere suggested that the falling hair had reference to the long, slanting rays of the setting sun.

Provided with these deductions from the stone itself, let us turn to the records of Old Mexico and see if they corroborate the opinion stated. Fortunately, we possess several of these venerable documents, chronicles of the empire before Cortes destroyed it, written in the hieroglyphs which the inventive genius of the natives had devised. Taking two of these chronicles, one known as the *Codex Telleriano-Remensis*, the other as the *Codex Vaticanus*,* I turn to the year numbered "ten" under the sign of the rabbit, and I find that both present the same record, which I copy in the following figure (Fig. 5).

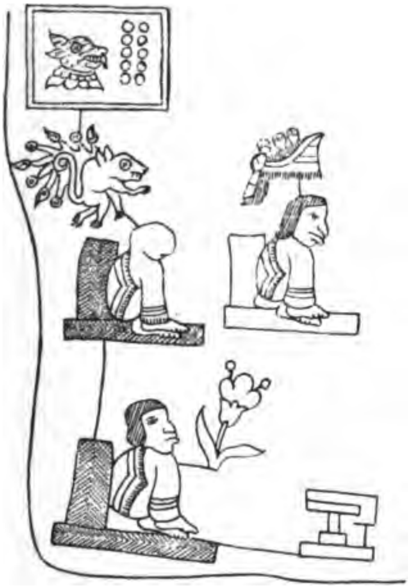

FIG. 5.—EXTRACT FROM THE VATICAN CODEX.

You will observe the sign of the year (the rabbit) being shown merely by his head for brevity. The ten dots, which give its number, are beside it. Immediately beneath is a curious quadruped with what are intended as water-drops dripping from him. The animal is the hedge-hog, and the figure is to be construed *iconomatically*, that is, it must be read as a rebus through the medium of the Nahuatl language.* In that language water is *atl*, in composition *a*, and hedge-hog is *uitzotl*. Combine these and you get *ahuitzotl*, or, with the reverential termination, *ahuitzotzin*. This was the name of the ruler or emperor, if you allow the word, of ancient Mexico before the accession to the throne of that Montezuma whom the Spanish *conquistador* Cortes put to death. His hieroglyph, as I have described it, is well known in Mexican codices. †

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* Both are reproduced in Kingsborough's *Mexican Antiquities*. But I would warn against the explanations in Spanish of the *Codex Telleriano-Remensis*. They are the work of some ignorant and careless clerk, who often applies the explication of one plate and date to another, through sheer negligence.

Returning to the page from the chronicle, we observe that the hieroglyph of Ahuitzotzin is placed immediately over a corpse swathed in its mummy-cloths, as was the custom of interment with the highest classes in Mexico. This signifies that the death of Ahuitzotzin took place in that year. Adjacent to it is the figure of his successor, his name iconomatically represented by the head-dress of the nobles, the *tecuhtli*, giving the middle syllables of "Mo-*tecuh*-zoma."‡ Beneath is also the figure of the new ruler, with the outlines of a flower and a house, which would be translated by the iconomatic system *xochicalli* or *xochicalco;* but the significance of these does not concern us here.

This page of the Codices gives us, therefore, a record of a death in the year "10 *tochtli*"—1502—of the utmost importance. No previous ruler had brought ancient Mexico to such a height of glory and power. "In his reign," says Orozco y Berra, "Mexico reached its utmost extension. Tributes were levied in all directions and fabulous riches poured into the capital city." The death of the ruler was, therefore, an event of the profoundest national significance. We may well believe that it would be commemorated by some artistic work commensurate with its importance; and this I claim was the purpose of the *Piedra de los Gigantes* of Escamela.

But we may add further and convincing testimony to this interpretation. The day of the month *ce cipactli*, 1 Fish, is engraved to the right of the figure as connected with the event commemorated. Now, although I have not found in the records the exact day of Ahuitzotzin's death, I do find that the native historian, Ixtlilxochitl, assigns this very day, *ce cipactli*, 1 Fish, as that of the accession of Montezuma,* and another native historian, Chimalpahin, states distinctly that this took place "immediately" after the death of his predecessor on the throne.† It may possibly have been on the very day of Ahuitzotzin's decease, as still another native writer, Tezozomoc, informs us that this was not sudden, but the slow result of a wound on the head.‡

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* I would refer to an explanation of this system published by me in the *Proceedings of the American Philosophical Society* for 1886.

† The phonetic significance of this symbol is well established. See Aubin, in the Introduction to Brasseur, *Histoire des Nations Civilisées de la Mexique*, Tome, I, p. lxix.

‡ *Historia Antigua de Mexico*, Tome III, p. 426.

It is indeed remarkable that we should find the precise dates, the year and the day of the year, depicted on this stone and also recorded by various native writers as connected with the demise of the emperor Ahuitzotzin. These coincidences are of such a nature that they leave no doubt that *La Piedra de los Gigantes of Escamela* is a necrologic tablet commemorating the death of the emperor Ahuitzotzin some time in February, 1502.

DECEMBER 5TH.

Mr. Inman Horner exhibited a superb Japanese short sword belonging to Dr. John B. Shober, of this city, to whom it was presented by Go Shinosuke; one of a large family of brothers, whose father, Go Jinzo, was Vice-Minister of the Japanese Treasury Department some ten or fifteen years ago. The sword had the peculiarity of an inscription upon the blade. Mr. Benjamin Smith Lyman stated this inscription was in Japanese characters, and appeared to be the name of the sword. "It is not usual," he said, "for swords to have a name in Japan, but it is sometimes done, as in Europe. Two famous swords are recorded in Japanese history. One called Hizamaru (the knee sword), from its being tried upon a convict, and at one stroke severing the knee as well as the neck, and another called Higekiri (beard cutting), from its cutting through the beard when similarly tried. Another sword is mentioned in the celebrated romance of the memoirs of the Eight Dogs of Satomi and called Murasame (Autumn Showers), because it had the magical property of shedding water that kept it free from blood. The sword now exhibited is inscribed with *Osoraku*, which appears to mean 'fearful,' so the sword probably bore the not inappropriate name of 'The Fearful.' Being a short sword, it has no guard, as the short sword was sometimes worn beneath the robe, where a guard would be in the way. Long swords usually have an inscription under the wooden handle, giving the name of the maker and the date. This bears none, but the maker's name is found upon the blade of the small knife inserted into the same scabbard, which is inscribed *Monju Shiro Kanekiyo*. Kanenaga was the name of a famous sword-maker, some of whose swords are dated from A. D. 1321–1323. A successor of his was Kaneyoshi (1492–1500), and from certain parallel inclined lines which Kaneyoshi used as a distinguishing mark, and found on the part of the present sword concealed by the handle, it seems probable that the maker, Kanekiyo, was a pupil of his, or a not very distant successor, making the sword, therefore, probably over 350 years old. The scabbard is ornamented with iron, inlaid with gold devices bearing the badge of the 'Chief of the Princes,' the Shogun, who is commonly known to Europeans as the Tycoon. From this badge, the leaf and blossom of the *Paulownia Imperialis*, it is probable that the sword was a gift from the Tycoon to one of his retainers, probably an ancestor of the Japanese donor. A gift from the Tycoon was most highly valued by a Japanese subject, for example in a certain gentleman's garden a large stone monument was erected and inscribed to commemorate the gift of a rabbit by the Tycoon to the owner."

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* Ixtlilxochitl, *Historia Chichimeca*, cap. 70. He errs in assigning it to the year 1503, as all the other narratives of importance are against him.

† *Annales de Chimalpahin*, p. 173 (Ed. Siméon, Paris,1889). His words are "Auh ça niman ihcuac oncan in hual motlatocalli in Moteuhcçomatzin," which Siméon renders "Immédiatement apres," etc.

‡ Tezozomoc, *Cronica Mexicana*, cap. 81. This writer adds that the emperor expected his approaching end and made a number of preparations with regard to it. The *Annales de Cuauhtitlan*, p. 80, places the event of 10 *tochtli* under the following year, 11 *acatl*, and the reverse. It reads, "Murió el Señor de Tenochtitlan, Ahuitzotzin, le sucedio immediatamente Moteuczomatzin."

The President, Dr. Brinton, gave an account of a visit made by him in company with Dr. C. C. Abbott to the railway cut at Trenton, where the latter has recently made important discoveries of paleolithic implements.

Mr. Culin exhibited a collection of ancient Indian coins recently received from the East, comprising specimens of the coinages of several of the native States, some Indo-Greek pieces, and a series of the Mohammedan Emperors.

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CONTENTS.

PAGE.

Officers and Committees for the Years 1890–91, ... 7–8

Resident Members, ... 9

Honorary Members, ... 11

Corresponding Members, ... 11

Donors to the Library, ... 14

Donors to the Cabinet, ... 16

Donors of Money, ... 16

Enigmas in American Archæology, ... 17

The Prehistoric Coppersmiths of Wisconsin, ... 17

The Cosmic Ether, ... 19

Japanese Swords, ... 23

The Japanese Method of Making Iron and Steel, ... 52

Shakudô, ... 60

Inscriptions from Easter Island, ... 61

East Indian Fortune-telling with Dice, ... 65

Certain Daphnæ and Naukratis Symbols, ... 72

Syrian Games with Knuckle Bones, ... 121

Tip-cats, ... 125

Weights and Scales among Some American Tribes, ... 127

Copper Implements near Betterton, Md., ... 128

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1890.

JANUARY 2D.

President Brinton delivered the annual address, his subject being "Enigmas in American Archæology."

After referring to the increased attention paid of late years to the study of the antiquities of America, he said the result of these studies had been to increase the problems offered by the ancient history of America. "Right here, in the valley of the Delaware River, remains had been found assigning man a residence along the river when the reindeer and the wild peccary were his companions, and when the great ice sheet covered the whole continent to the north. Recent explorations in Florida reveal the existence there at no very remote age of a dense and cultivated population. The examination of mounds along the Ohio had disclosed a condition of the arts among the people who built them not unworthy of comparison with the ancient Greek colonies. In Arizona industrial works had been discovered of vast extent and unknown antiquity; and in Mexico and Central America researches are constantly bringing to light new and surprising remains of the former occupants of the land." The speaker closed by urging the prime importance of early and extended research and collection in the field of American archæology.

Mr. Thomas Hockley presented a copy of the beautiful bronze medal awarded by the Pennsylvania Museum and School of Industrial Art at the recent exhibition of ceramics in Memorial Hall, Fairmount Park.

The death of the Hon. George H. Boker, a life member of the Society, was announced as having taken place on the day of the meeting, in the 67th year of his age.

FEBRUARY 6TH.

Dr. Charles C. Abbott delivered an address entitled "The Prehistoric Coppersmiths of Wisconsin." After referring to the scarcity of copper implements among the remains found on the Atlantic coast, although native copper occurs, the speaker stated the central point in the United States for this metal is in the State of Wisconsin, and that here, naturally, the most important discoveries of worked copper have been made. A collection of copper implements from Marquette County, Wisconsin, numbering 560 objects, all found on a small field of about five acres and the result of thirty years' gathering, was then described. This remarkable collection is now in the Museum of Archæology of the University of Pennsylvania. From it a small number of typical objects were exhibited. Among them were four fish-hooks which present a remarkable similarity to the bronze fish-hooks found in the Swiss lake dwellings. A celt, a knife, a spear point with a peculiar haft, an awl pointed at both ends, and a spoon-shaped object, which is really a form of knife peculiar to this country, were also shown. The speaker was positive that none of these objects were molded. Dr. Kœnig, of the University, had examined them, and concurred with Dr. Abbott in his opinion.

In connection with the copper implements a collection of 3,000 objects of stone from the same field was sent. Some of these were stated to be forms not found in other parts of the United States, and apparently modeled on those of the coppers. At the conclusion of Dr. Abbott's remarks, President Brinton referred to the effort that had been made on the part of some archæologists to insert an additional period between the age of stone and the age of bronze; this is the age of copper, and the objects in the present collection afford the strongest confirmation of that view. But they must be regarded, according to Dr. Brinton, simply as malleable stone, and belonging to the stone age. These implements are remarkable for their correspondence with the bronze objects found in Europe. The early workers in metal imitated the forms of the stone implements, and the knife of peculiar form in the present collection was probably copied from the semi-lunar form of the flint knife. The exploitation of copper in the Lake Superior region must be regarded as prehistoric, and the mines had all been abandoned at the time of the first contact with foreigners.

Two copper beads in the Society's collection from Rehoboth, Del., which had been originally obtained at the sale of Long's Museum, were exhibited and their antiquity discussed. Dr. Abbott stated that many such beads were made from brass obtained from the first settlers, brass kettles and afterward sheet brass being eagerly purchased by the Indians for this purpose. The fact that the metal of these beads was brass or native copper would determine their character.

MARCH 6TH.

The Rev. Dr. Joseph F. Garrison spoke as follows on

"THE COSMIC ETHER."

The term "antiquarian" is usually applied to the study of things. My remarks have to do with the history of ideas, and I wish to show the curious vitality of certain ideas, which, originally mere metaphysical conceptions resting upon no foundation of fact or experiment, are now coming up again in these later days among the mathematical verities of science.

It is extremely curious that the assumption of a cosmic ether, one of the latest conclusions of modern science, compelled by the severest necessities of mathematics in the two great subjects of astronomy (comets) and of light (the undulatory theory), should have been one of the essential elements of the speculations, theologic and philosophic, of the remote East, and should have reappeared ever since in almost every age, and been a vital element in almost every system of attempts to account for the phenomena of nature, from the Hindu Upanishads to that of the great Berkeley, Bishop of Cloyne. It reappears again in the wholly opposite spheres of thought represented by Clerk Maxwell in *Science* and Elias Levi in *Theosophy*, not to mention the very remarkable attempt of the two distinguished Edinburgh scientists, Professors Stewart and Tait, in their most suggestive book, *The Unseen Universe*, to find in it the origin and continuance of life, and its re-incorporation in new and higher forms after death.

The interesting point in the cosmic ether as a subject of antiquarian study is the fact of the early existence of a belief in some universal substance of an infinitely more refined and subtle nature than any form of matter known to us, and which is either regarded as itself a primitive force and source of action or creation, or the primary medium on which and from which the Supreme Intellect was able to form and keep in action all portions of the universe. The ablest thinkers in most cosmogonies of which we have any knowledge assume as one of their fundamental elements an agent, rendered generally by some word corresponding to our term cosmic ether, which has essentially the same feature as the substance now regarded by the necessities of the highest mathematics as a factor in the calculations of the exact sciences of light and astronomy.

In the Upanishads it has a vitally important place. Its Hindu name is *Akasa*, not a physical ether, but that potential somewhat from which all things come, and which indeed in a sense is ALL. It is identified with light and the manifestations of Brahma and in a sense with space.

When we come to the Greeks, we find that Pherecydes was in possession of a similar idea to that held by the Hindus regarding the primitive elements of the universe. He makes three primal powers or universal substances. Zeus, ether, the active principle in all; Earth, the passive, and Time, that in which Ether and Earth produce all things. Anaximander considered the origin of all things as an aeriform substance, eternal and imperishable, embracing and governing all; in effect, an ether having spontaneous and eternal movement. This incorporeal principle has an eternal activity, and thereby produces a sort of evolution by which it evolves concrete and finite realities. The first forms of these are air and fire. Anaximenes declared that the entire world has for principle of unity, and at the same time principle of life, a universal air; so that the world is a living being, and that this air (evidently the same in property as ether) can scarcely be distinguished from matter, and yet it is that which moves all and produces all—is a substance infinite and invisible—in fact, God Himself. Heraclitus does not employ in this connection "ether," but has a curious pre-intimation of the fact, now scientific, that light, fire, heat, and electricity are all only various forms of the one universal potential substance. He calls it fire. Not fire as we know it, but that subtile fire that causes all things and into which all things return.

If we follow down the whole line of phases under which the philosophers presented parallel ideas, all implying the existence of a universal, exquisitely subtile substance which was itself the form in which cosmic thought existed and evolved the universe, or which was the prime and universal material out of which the cosmic thought evolved all things, we find it was called by several names—fire, the Infinite, air, or more frequently ether, and possessed the marvelous faculty that out of it the primeval elements were all produced. These themselves were regarded as mutually resolvable into one another. Fire could become light—light, fire. Ether might be transformed into life, and some even fancied, in its eventual workings, it was thought;—a most curious foreshadowing in many forms of the modern doctrine of conservation of energy and interchange of the vital or fundamental forces, which first became popularized in Tyndall's book, *Heat, as a Mode of Motion*. Plato and the Stoics assume in various ways the existence of some such substance or mode of action as the essential element of the cosmic universe. In the Phœnician mythology are references to a like universal fundamental agent called sometimes air, alluded to as aeriform and posited as the substance out of which all things were made.

During the period from the last of all classical philosophy and general literature we have no speculations worth noting on this or any other matter not immediately connected with the peculiar phases of Middle Age philosophy and ritual; but among the earliest exhibitions of the renewal of thought we find a reappearance, whether by a rediscovery in the old Greek and Indian writers, or because one of the permanent ideas of the race, it comes to the surface on every occasion. We find it in the Gnostic system; in the Kaballa; in the Occultists; in the Magicians; in so great a modern thinker as Bishop Berkeley; and finally taking its place, not as a metaphysical hypothesis or fancy, but as a bald mathematical necessity.

A conception of the existence of such universal ether with a claim to knowledge how to use and utilize its various forces, is the foundation of all the occult sciences, whether in the refined and subtle Hindu systems of twenty-five hundred years ago, or the new forms of occultism in the Middle Ages and certain of their followers of to-day. Infinite contempt and jest has been and is yet cast upon their claims, but the latest results of Clerk Maxwell and Professors Stewart and Tait must relieve them from much of this. These writers more than hint that there is a world-pervading and a world-active substance, in which the universal forces of heat, light, electricity, motion, and other cosmic forces are essentially inherent; and also that one who knows can transmute heat into light; can, by motion, transmute either of them into electricity, or this into any or all of the others. Many assert, not obscurely, that under fitting circumstances they can evolve life, and that life, again, may be elevated into intellect. In other words, that there is a universal substance which, whether by a potency of its own or that of a Being from without, can be made to take on any of the cosmic forces and can enable them to interchange, moreover, that this one substance is common to all things, and that it may, by one who knows how to employ the force in it, be made into any of them or anything may be transmuted back into this one substance and reproduced in another form—that is, that he who knows how to deal with the force of this ether may not only transmute heat into electricity, but copper into gold; can indeed by the action of these forces obtain the elixir of life. I should be very far from admitting the possibility of any of these latter statements, yet not more so than David Hume would have been from admitting the notion that a baby's touch in Liverpool could be transmitted into an electric current that could convey beneath the ocean the subtle reasoning of his marvelous essays.

We have seen this conception that now plays so large a part in our latest mathematical science make its appearance in the earliest ages of philosophy as one of its most tenacious assumptions. This not in one line, but many: the Hindus; a long line of the Greeks; the later Neo-Alexandrians; the Old Testament; the philosophic Gnostics; the subtle Kaballists; the Occultists of the Middle Ages; the alchemists and magicians; the marvelous system of Paracelsus and Jacob Boehme; the present school of quack mesmerists, and the most careful students of hypnotism. Besides these, one of the most remarkable of all the writings of Bishop Berkeley, *Siris*, is an elaborate and most extraordinary endeavor to show that it was impossible for science to construct a theory of the universe, even in his day, without the admission of some such element into the system. And, finally, that which to me gives this subject its supreme interest is the admitted necessity among scientists of the present time to assume, on mathematical and astronomical grounds, such as the character of light, the conservation of energy, the transmutation of force and the nebular hypothesis that there must be some such actual and potential agent through which the cosmic phenomena must be carried on and maintained.

This has not the tangible interest of a new fossil, it may be, but it is certainly a most curious and interesting preintimation of things to come.

Mr. Inman Horner. in the discussion that followed the paper, urged that modern thought on the subject of cosmic ether (and the correlation of forces) has a purely physical basis.

President Brinton, in commenting upon Dr. Garrison's address, which he characterized as highly erudite and suggestive, said that striking analogies in the same current of thought were found among the American Indians. They regarded light as the motor force of the universe. In the religion of the North American tribes the principle of light was regarded as the fundamental and most important principle of all. Not sun worship, or fire worship, as has been sometimes described, but the respect and worship of light. Among the Algonquins, according to the Jesuit Fathers, the highest divinities were those that made the light, *kichigouai*, "those that make the dawn." The great characters of the American hero myths may all be regarded as the personification of light—that something which is emitted by the sun, but not fire or the sun itself. The word *akasa*, that Dr. Garrison spoke of in the Upanishads, had its counterpart in the Mexican *tloque nahuaque*, "that through and by which all things are." The general argument of Dr. Garrison, so far as it relates to the great development of man, is borne out by a study of the theology of the original inhabitants of America.

What one generation conceives in a mythological sense another may arrive at in a practical sense, but he did not understand the Greek philosophers, Anaximander and the rest, as having expressed the doctrine of evolution as we understand it. Among the Greeks there was a lack of any appreciation of organic development.

Mr. Stewart Culin, in referring to the existence of the idea of a cosmic ether among the people of the farther East, called attention to the argument presented by Gustave Schlegel in his work on "The Hung League," the great Chinese secret society, that an ancient worship of the principle of light is conserved in the institutions of that society.

Mr. Robert S. Patterson presented a copy of the Eiffel Tower medal purchased by him on the highest stage of the tower. This medal was gilded, bronze and silver medals being sold on the first and second stages.

A committee consisting of Francis Jordan, Jr., Thomas Hockley, and John R. Baker was appointed to secure better accommodations for the meetings of the Society.

APRIL 3D.

Mr. Benjamin Smith Lyman read the following paper on

JAPANESE SWORDS.

The subject of Japanese swords, relics of barbarism as they are, is a rather unpromising one, and is, in fact, less fruitful than some others, but yet is not wholly without metallurgical, ethnological, historical, æsthetic, and even moral interest. In particular, anybody who happens to possess such a beautiful object, or to have the opportunity of inspecting one, is naturally desirous to learn something about it. Chiefly through the zeal and activity of our Secretary, Mr. Culin, we have a number of good specimens to exhibit this evening, lent by their owners for the occasion. There are:

Three swords belonging to Mr. Culin himself.

One sword belonging to the Baba collection, at Memorial Hall.

Two swords belonging to the University Museum.

One sword belonging to Mr. Terashima.

One sword belonging to Dr. McClure.

One sword belonging to Dr. Shober.

One sword, short, *heyazashi*, with dragon-flies on the scabbard, belonging to Mr. H. Rush Kirby.

Four swords belonging to myself.

No very full account of Japanese swords yet exists in English or is easily accessible in any language. A very thorough memoir on Japanese sword-blades is given by George Huetterott, Japanese Consul at Triest, in the Communications of the Japan German East Asiatic Society, Vol. IV, pp. 111–128, 1885. There are less complete articles on the Japanese sword by T. H. McClatchie, in the transactions of the Japan Asiatic Society, Vol. II, pp. 55–63, 1873; by C. Pfoundes, in *Fu-So-Mimi-Bukuro*, pp. 158–171, 1875; also, a paper by G. Mueller-Beeck, in the *Zeitschrift für Ethnologie*, 14 Jahrgang, 1882, Heft 1 (but I have not had any chance to see it); and swords are spoken of at some length in Mitford's *Tales of Old Japan*, Vol. I, pp. 70–73, and pp. 113, 114; and in Wertheimber's *A Muramasa Blade*.

The Japanese encyclopædia, *Wa-Kan-San-Sai-Dzu-E*, Vol. XXI, fol. 17, speaks of swords; also, other Japanese encyclopædic works.

Japanese swords may be discussed with reference to their own characteristics, their history, and the customs connected with them.

A. CHARACTERISTICS.

The characteristics of Japanese swords will best be learned by considering (1) their forms; (2) the processes of their manufacture; and (3) the methods of their valuation.

1. Form.—According to the number of edges Japanese swords are divided into: (1) two-edged swords, called *tsurugi;* and (2) one-edged swords, called in general, *katana*.

1. *Tsurugi*.—The two-edged sword, called *tsurugi*, is the primeval form of sword in Japan, and for many centuries past has not been used, and is now seldom seen. It is set up as an ornament in temples. It was from 28 to 40 inches long, and about 2½ or 3 inches wide, and in the middle up to 3-5 of an inch thick. It ended in a short point, and often thickened and broadened towards the point. It was a heavy sword, and, though pointed, was for cutting more than for thrusting. (See figs. 1 and 2.)

It had two principal forms: (*a*) one flattened along the middle line, ending in an abrupt triangular point, and (*b*) the other sloping directly from the middle line to the edges, and with the point less abrupt.

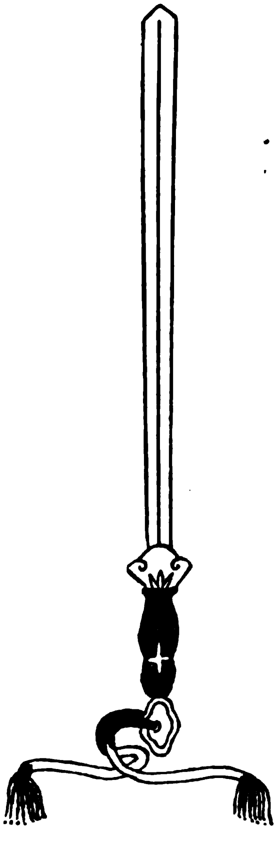

Fig. 1.—TSURUGI.

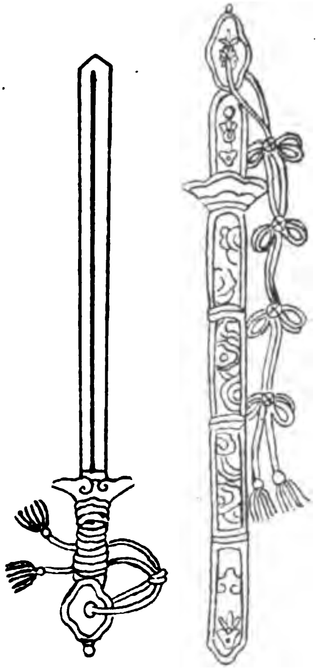

Fig. 2.—TSURUGI.

2. *Katana.*—The one-edged sword is supposed to have been derived from the *tsurugi* by division along its main line, with one edge, and is therefore, it is said, called *katana*, from *kata-no-ha* (*Wa-Kan-San-Sai-Dzu-E*, Vol. XXI, f. 17), or edge on (one) side. It became thereby more handy, and, in spite of its point, was still a cutting rather than a thrusting weapon, and was made yet more effective for cutting by a more or less decided curve. The superiority of swords fit for thrusting, and therefore straight and pointed, as weapons of

defense as well as offense, well known for centuries in Europe, and even understood by the ancients there, seems never to have been fully comprehended in Japan, nor in the rest of Asia. The defense has depended rather upon heavy armor. The Japanese, however, used lances for thrusting.

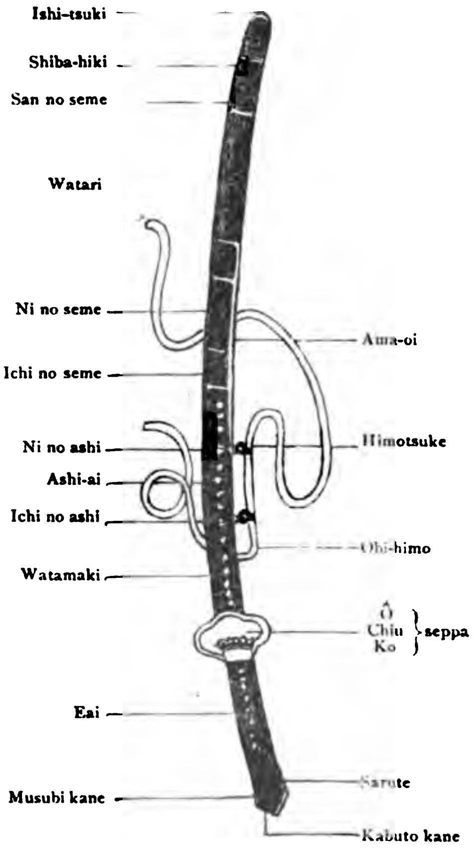

Fig. 3.—TACHI.

Of the one-edged swords there are many varieties of form with many ways of classifying them.

a. The most important kinds depend chiefly on the length, measured from the guard or inner end of the hilt to the point, as follows:

aa. *Tachi; ab*. *Katana* proper; *ac*. *Wakizashi; ad*. *Tantô; ae*. *Yoroi-tôshi; af*. *Kuwaiken; ag*. *Kodzuka*, or *kami-kiri*, or *kogatana:* besides *ah*, several less important varieties.

aa. The *tachi* (fig. 3) is a sword said to be longer, more slender, and more strongly curved than the *katana* proper, and in some sort intermediate between it and the *tsurugi.* It is hung on by cords, or narrow straps or bands. It was the sword used by generals, and a sign of their rank. It has long been out of use, and is now somewhat rare and only seen as an ornament or curiosity.

ab. The *katana* proper (fig. 4) is on the average from 2 feet 6 inches to 2 feet 9 inches long. It is the common long sword of Japan worn by the military class.

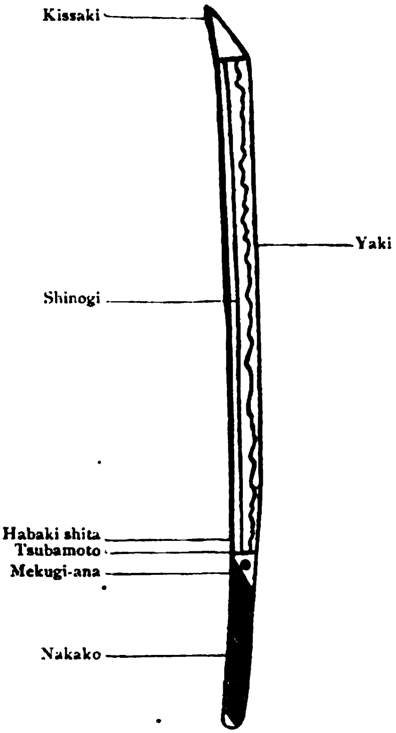

FIG. 4.—KATANA.

ac. The *wakizashi* averages about 1 foot 6 inches to 1 foot 8½ inches long, and has a guard between the hilt and blade. It is the shorter of the two swords worn by the military class.

ad. The *tantô* (*i. e.*, short sword) is somewhat shorter than the *wakizashi*, and is often "nine and a half tenths of a foot" (*ku-sun-go-bu*) long and so called. It was the sword allowed to be worn by tradesmen and others not allowed to wear the *katana* or *wakizashi*.

ae. The *yoroi-tôshi*, or mail-piercer, is a dagger still shorter than the *tantô;* and was formerly worn along with the *katana* and *wakizashi*, before military men were restricted to these two.

af. The *kuwai-ken* is again a still shorter dagger worn by the ladies of the military class.

ag. The *kodzuka*, or *kamikiri* (paper cutter), or *kogatana* (little *katana*), is the small knife found inserted in the outer part of the scabbard of some *wakizashi*, *tantô*, and *yoroi-tôshi*. It ought, perhaps, not to be reckoned as a sword, though it has its warlike uses.

ah. There are several other forms distinguished by special names, but less commonly known, either because the varieties are more rare, or because the distinction is less important. Pfoundes enumerates several: the *jintachi* (war sword), a long, heavy two-handed sword, generally carried by a sword bearer when not in immediate use; the *nôdachi*, a more plainly-mounted sword of medium size, worn in hunting or in country rambles; the *shin-no-tachi*, a highly-ornamented *tachi*, with a shagreen hilt and some 75 examples of the owner's badge on the mountings; the *yô-no-tachi*, "with a lacquered and gilt scabbard," and corresponding perhaps to an *in-no-tachi*, as the *in* and *yô* are the male and female principles of the universe according to the Chinese philosophy; the *chisakatana* (small sword), about two feet or two feet and a half long, lighter than the ordinary *katana*, and worn with the long dragging trousers (*nagabakama*) of the court dress; the *aikuchi*, a short dagger, really a *tantô*, worn by doctors, artists, and others of a certain rank. There are also other names that are, perhaps, given to indicate special modes of wearing a sword rather than varieties of form, such as *metezashi*, a short sword stuck in the girdle behind, accessible to the right hand for use when the wearer is thrown and unable to draw the sword on the left; *mamori-katana* (protecting sword), a short dagger, or *tantô*, worn concealed. A very short sword, or short *tantô*, worn in the house is sometimes called a *heyazashi*.

b. Irrespective of length, one-edged sword blades may be distinguished according to their main cross-sections; and in correspondence with the *tsurugi* there are two principal varieties of cross-sections:

aa. The so-called proper-make (*hon-tsukuri*), or *shinogi*-make, having on each side of the blade two surfaces; one a flat surface, called *shinogi*, at right angles to the back, and from the back towards or to the mid-line; and a second called *jigane*, sloping thence down to the edge; the point, too, agrees with the corresponding form of the *tsurugi*, and generally is marked by a cross-line where it starts. The *shinogi* is distinguished as broad or narrow, and the point as small or large, or middling. Sometimes the edge is very narrow (called *kiri-ha*).

ab. The so-called plain make (*hira-tsukuri*), has no *shinogi*, only the *jigane* on each side of the blade, one surface sloping from the back to the edge, and is mostly confined to the shorter kinds of sword. The beginning of the slope towards the point is not marked by any cross-line. The point may either have its edge gently curving, almost straight (*fukura-sugu*), or more abruptly curving (*fukura-kaku*).

ac. According to the form of the back there are several varieties, as: (*aca*) Round-backed (*maru-mine*); (*acb*) angle-backed (*kaku-mine*); (*acc*) cormorant-neck-make (*u-no-kubi-tsukuri*), with a part of the back forming a blunt or cutting edge; (*acd*) with a slight difference also (called *kammuri-otoshi*); (*ace*) with such an edge all along the back or reaching nearly to the point, flag-leaf-make (*shôbu-tsukuri*).

ad. According to the grooves often cut in the blades, they are distinguished as: (*ada*) Groove-short-of-the-point (*hi-saki-shita*); (*adb*) groove-up-to-the-point (*hi-saki-ue*), and (*adc*) double-groove (*futa-suji-hi*).

ae. According to the general curve of the blade the swords are classed as: (*aea*) Nearly straight (*tsukuri-sugu*), and (*aeb*) strongly curved (*tsukuri-sori*).

1. MANUFACTURE.—The main features to be considered in the manufacture are: 1, the smith; 2, the material; and 3, the processes.

1. *Smith.* The swordsmith was held in high esteem, far above all other mechanics, and even one of the Emperors practiced the art of forging swords. Very good smiths were sometimes given the title of Lord or Vice-Lord of a province, or a high military rank, with an annuity. Some of our swords this evening are marked as made by the Lord of a province. The smith prepared himself for his work by prayers, by self-purification through the strictest fasting from all animal food and spirituous drink, through abstinence from all intercourse with women, even with his own wife, who was not allowed so much as to enter the forge, and through daily cold ablutions and other godly behavior of all kinds. Above the anvil, between two upright bamboos, hung the sacred straw-rope (*shime-nawa*), with its bunches of straw and its cut paper (*gohei*). The smith went to his important work adorned with the ceremonial

dress of a court noble. (See the picture in Mitford's *Tales of Old Japan*, Vol. I, p. 71.) With such manifold precautions the making of a blade often lasted months, or even years.

Not only must the five elements, fire, water, wood, metal, and earth, work together to make a good sword, but really great skill and experience was required. No doubt success was promoted by the profound concentrated attention, complete carefulness, and conscientious thoroughness aroused by the momentous solemnity attached to the operation through, to be sure, a superstition that gave it sanctity, so that the swordsmith

"Wrought in a sad sincerity,
Himself from God he could not free."

2. MATERIAL.—The earliest swords, *tsurugi*, were made of copper or bronze, but for many hundred years past only steel and iron have been used for them. The steel and iron were generally of Japanese origin,* but sometimes during the last three centuries European steel or iron has been used, obtained through the Dutch traders. Sometimes the sword is then marked as made of the iron of the ***Namban*** (Southern Barbarians), as Europeans were called. Great care was taken in selecting a good quality, and numerous tests were made of the fracture during the early part of the forging.

The blade is sometimes made wholly of steel, and sometimes of steel and iron bars welded together. Sometimes an intimate mixture of steel and iron, half and half (in Sagami), or one-third steel and two-thirds iron (in Hizen), welded and hammered together, was used instead of the iron bars, thereby improving the quality; and sometimes instead of the steel ones, and so injuring the quality. The use of steel alone was called pure-make (***muku-tsukuri***), or pure-forging (*muku-gitai*). Often the mixed steel and iron plates were substituted for all the steel ones in this style.

3. PROCESSES.—The processes are:—(*a*) forging; (*b*) tempering; (*c*) the smith's finishing-up; (*d*) grinding; (*e*) mounting.

(*a*) *Forging.*—There are several styles of forging, mainly of two classes called (*aa*) pure-make; and (*ab*) mixed-make.

aa. *Pure-make.*—To begin with, the pure-make. Throughout the forging, the metal to prevent "burning," or the conversion of the steel into soft iron by the oxidation of its carbon, is never heated without being carefully coated with loam, as refractory as possible, spread over it as a thin wash and sprinkled with straw-ashes. The metal, too, is with the greatest pains kept perfectly clean, and must never be touched with the hand, as the least sweat will hinder the perfectly uniform welding of the parts together and leave a flaw visible in the sword.

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* For the Japanese method of making steel and iron, see Appendix A.

A steel plate, with an iron rod welded to it as a handle, and with several pieces of steel placed upon it, is heated in the fire and is hammered out on the anvil to a shape about six or eight inches long by an inch and a quarter, or two and a half wide, and one-quarter or three-quarters of an inch thick, according to the size of the blade desired, allowing for loss in hammering. The steel bar so formed is marked with a chisel at mid-length, and doubled over, heated again, and hammered out to a bar of about the same dimensions as before; doubled over again, re-heated and hammered out once more, and so on until it has been folded and hammered fifteen times. Then its iron handle is cut off. In like manner three more such bars are made. The four bars are welded upon one another into a somewhat thicker, longer bar, and this again is five times doubled over and hammered out to about the same dimensions.

The resulting bar, then, is made up of a vast number of layers intimately welded together. The first doubling gives two, the second four, and so on up to the fifteenth, which gives 32,768, and the four small bars together consist of 131,072 layers, and after the five additional foldings there must be 4,194,304 layers.

In consequence of these thin layers produced by the repeated folding, the polished sword has fine lines like the grain of wood. They are called the sword's *hada* (skin); and are distinguished, according to form, by the names: straight-grain-skin (*masame-hada*, curved-grain-skin (*itame-hada*), like the grain of a board; pear-skin (*nashi-hada*), in shape of a halved pear; pine-skin (*matsu-hada*), ragged like the bark of a pine tree.

The steel bar is now with frequent and partial heating hammered out to the length of the desired blade; somewhat bent in shape, if to be one-edged; both ends cut off, where the metal is inferior; the point formed, and by hammering thinner towards the edge (or in the case of the *tsurugi*, the two edges) the right breadth is obtained, and the blade gets its rough form. The shape is apparently given without measurements or patterns, but solely by the practiced skill of the smith with his true eye. The curve of one-edged swords depends on the taste of the smith or of the man who has ordered it, or in the case of certain ceremonial swords is prescribed by rules of etiquette.

The rough blade is scraped off with a kind of metal draw-knife and filed, and is then ready to have its edge hardened.

The shape of the file and the direction of the lines made with it have, of course, nothing to do with the quality of the sword. But, as the file lines (*yasuri-me*) remain permanently on the tang, they serve in some degree for the identification of the maker, and special names have been given to different arrangements of them. Among many, seven such names are given by Huetterott, p. 123 and plate xxvi.

The following nine names and illustrations of different kinds of file marks are taken from the *Yamato Setsuyô Daifuku*:

Fig. 5. *Higaki-yasuri;* made by Seki, a family name, or perhaps at a place called Seki.

Fig. 6. *Kirisujikae-yasuri;* made in the province Yamato.

Fig. 7. *Taka-no-ha;* falcon's wing; made in the province Yamato, by, or at, Seki.

Fig. 8. *Sujikae-yasuri;* made in the province Bizen.

Fig. 9. *Sen-moku;* made in the province Bitchiu.

Fig. 10. *Yoko-yasuri;* made at Mihara.

Fig. 11. The file marks made at Awadakuchi, and sometimes found on swords made in the province of Etchiu.

Fig. 12. *Yoko-sujikae;* made by Rai.

Fig. 13. *Katsura-yasuri-me*; made at Kiyôto.

ab. Mixed-make.—When iron is used along with steel, there are several ways of combining the small bars to make the larger one. There are: the three-layer-make (*sam-mai-tsukuri*), a steel bar between two iron ones; the folding-and-uniting-two-layer-make (*ori awase-ni-mai-tsukuri*), an iron bar welded upon a steel one and then folded over lengthwise with the steel inside; the folding-and-uniting-three-layer-make (*ori-awase-sam-mai-tsukuri*), a bar of steel and of iron welded together along the edge and covered by an iron bar as wide as both, and then folded over so as to bring the steel in the middle of one edge. Then, three kinds that particularly show grain lines: the straight-grain-make (*masame-tsukuri*), an iron bar welded flatwise upon a steel one and folded fifteen times, then hammered down upon the long narrow side (where are the edges of the many layers) to the flat blade form again; the fine-grain-make (*nogi-hada*, or *hoso-masame*, or *ko-masame-tsukuri*), like the preceding, only hammered down flat from one rectangular long edge towards the one diagonally opposite, the skin-forging (*hada-gitai*), with hollows cut by a chisel in the outer iron layers of the three-layer-make (*sam-mai-tsukuri*) and then hammered down again until the hollows have disappeared before giving the blade form. Then, the following three forms of wrapping iron in the steel with inferior results to the preceding: the over-turned-tortoise-shell-make (*ko-buse-tsukuri*), a small bar of iron welded to the inner side of a semi-cylindrical bar of steel and then the steel made into the edge of the blade; the wrapping-up-make (*uchi-maki-tsukuri*), a steel bar welded upon an iron one and then folded lengthwise so as to bring the iron inside and

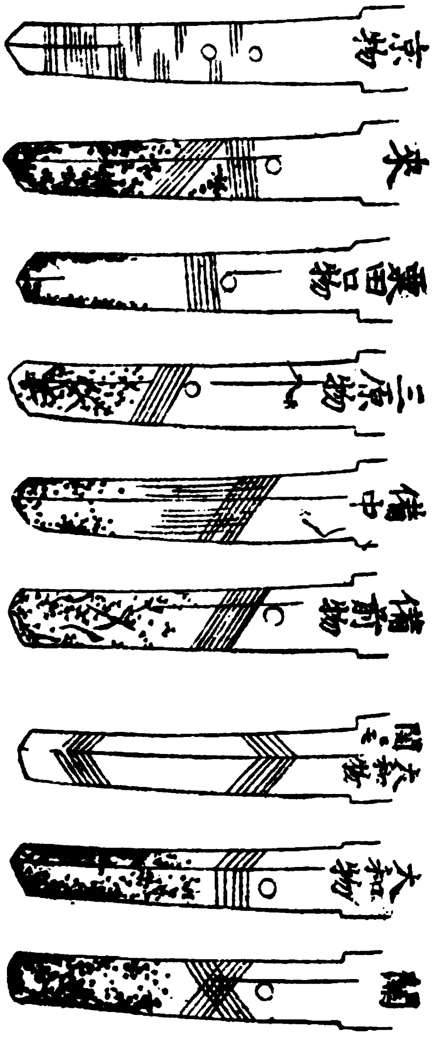


Fig. 5. Fig. 6. Fig. 7. Fig. 8. Fig. 9. Fig. 10. Fig. 11. Fig. 12. Fig. 13.

FILE MARKS.

leave the steel outside along one edge; the half-wrapping-make (*han-maki-tsukuri*), a narrower steel bar welded on an iron one and folded over lengthwise so as to leave the iron projecting from the steel at the back of the blade. Then:—three kinds more of very inferior quality but quicker to make, and frequent in war times—the four-side-packing-make (*shi-hô-dzume-tsukuri*), a bar of hard iron with one of soft iron welded along one edge, towards the back of the blade, and with a bar of steel along the edge, and with a broad bar of mixed steel and iron covering all three above and below; the split-edge-make (*wari-ha-tsukuri*), a bar of iron split with a chisel along one edge and steel welded into it for the sword edge; the applied-edge-make (*sue-ha-tsukuri*), a steel bar for the edge welded lengthwise to an iron bar for the back.

The foregoing thirteen varieties (including the pure-make) are the principal ones; but other slighter variations might have been mentioned. Sometimes steel alone was used in all these different ways except in the split-edge and applied edge, and the work was then called genuine forging (*shin-no-kitai*), and valued accordingly.

In general, the pure-make and three-layer-make give the best blades, and the smiths of the provinces Bizen and Sagami preferably used those methods; but the smiths of Yamashiro and Yamato used especially the straight-grain-make and the fine-grain-make. Still, it is not possible to draw a sharp line as to the methods used in different provinces, or by different famous smiths for the method is not to be distinguished by inspecting the surface of the finished blade, except perhaps in the split-edge and the applied-edge. Some assert that it can be told in the fracture, but that is somewhat doubtful and the opportunity seldom occurs with swords of celebrated masters.

b. TEMPERING.—The tempering of the sword is ingeniously and skillfully effected by a single operation in Japan instead of the two common in Western countries. In preparation for the tempering the blade is covered with a coating of loam about an eighth of an inch thick. The loam must stand the fire well, and is mostly a red earth, called rust-mud (*sabi-doro*), mixed with other things; commonly with an equal quantity of the finest powdered river-sand and one-tenth of the finest powdered charcoal. Many swordsmiths keep the composition secret.

Before the loam coating is quite hard, a narrow streak of it is very carefully removed with a bamboo rod along the edge of the blade, so as to leave the edge bare. The rest, completely covering all the other parts of the blade, is dried by the fire.

The smith in his right hand holds the blade by the handle with pincers and thrusts it edge downwards horizontally into the hottest part of a strong fire of pine charcoal of a special quality called forge-coal, while his assistant, or he himself with his left hand, regulates the heat by the bellows. The blade is moved slowly backwards and forwards in order to be uniformly heated throughout its whole length. The part next the tang is often drawn slowly out of the fire so that the master's practiced eye may judge in the carefully closed and darkened smithy when the right degree of heat has arrived. It comes in a few minutes; and the sooner the better, so that the loam covering may not have time to get overheated through and through.

The blade is taken from the fire and plunged immediately into cool lukewarm water, of a temperature and during a time determined by the smith, each smith his own way. The sudden chilling hardens the bare edge, and makes it capable of great sharpness, though very brittle. The loam protects the rest of the blade from too great heat in the fire, and now from too sudden chilling in the water, and so the desired temper for the body of the sword, sufficient hardness with toughness and elasticity, is obtained by the same operation that gives the still greater hardness to the edge.

This kind of hardened edge is called baked-edge (*yaki-ba*); and is readily distinguished by its lighter, whitish color, "edge-lustre" (*ha-tsuya*) from the darker, bluish color, "ground-lustre" (*ji-tsuya*) of the rest of the blade.

The narrow strip left bare at the edge for hardening is not always of the same breadth or shape, but differs according to fancy, and thereby many varieties with special names are distinguished. Huetterott enumerates about thirty of the principal ones (p. 121 and plates xxiii–xxv). A very broad *yaki-ba* is, however, not desirable, as it implies that a large breadth of the blade is brittle. Consequently a narrow straight hardened edge (*sugu-ha*), or simple irregular one (*midare-ha*), is in general preferred, and of most frequent occurrence. Among the other forms there is no special preference, and they are no indication of the quality of the sword. They are determined by the fancy of the smith or of the man who ordered the sword, and depend somewhat on fashion. In times of long peace the more complicated forms are apt to be preferred. The form is not a mark by which the celebrated smiths' work can be absolutely distinguished, as each used various forms, yet connoisseurs know which forms occur most frequently in the work of the different masters.

The bounding line of the hardening at the point of the blade likewise gives rise to many various forms and names. Huetterott enumerates eight (see page 122 and plate xxvi).

The bath causes a curved sword to bend in some degree further; and that depends partly on the manner of plunging the blade into the water. A straight sword is dipped vertically downwards; a curved one is let down horizontally into the water, with the edge down, either suddenly or slowly, either evenly or with the point slightly lower at first and rising from the water as the tang goes in. This bending from the bath may amount in the case of a sword 32 inches long to as much as an inch and a fifth. If the blade curves too much, or by bad holding bends sidewise, it can be heated and hammered again, but with no benefit to the quality.

c. SMITH'S FINISHING-UP.—After the tempering, the blade is carefully cleaned, and is roughly ground on a coarse stone. The smith then first sees whether the blade is a success or not; whether the hardening is satisfactory, and whether there are blemishes in the metal. A smith careful of his reputation rejects all imperfect blades, and uses the material for other purposes. A less strict smith would let such failures be sold secretly and cheaply, but perhaps not under his own name.

Next, the smith cuts the grooves, if any, with a steel graving tool. The groove must have an exactly semi-circular cross-section. The grooves lighten the sword, and are found in even the oldest *tsurugi* and *katana*, and are called *hi*, and vulgarly *chi-nagashi* (blood drains), and were often filled with vermilion lacquer on lance points, though that was not thought fine for swords.

The smith drills the hole (*mekugi-ana*) in the tang for the bamboo or metallic peg that holds the handle on.

Many smiths adorn their blades with engraving, especially with representations of dragons, gods, flower-sprigs, etc. Some blades have Chinese, or *hiragana* characters, single words or whole sentences, or sometimes Sanscrit letters—sacred letters (*bonji*), as a charm. Such adornments sometimes serve to conceal blemishes in the blade, and consequently are little liked by some connoisseurs. The fine, short sword of Dr. Shober, exhibited at a former meeting, had on its blade a word in *hiragana* characters—*Osoraku* (fearful), apparently the name of the sword. One of the swords this evening has a dragon and some god on it.

The smith sometimes cuts his name on the tang, and the custom existed as long as about twelve hundred years ago, beginning, probably, with the swordsmith Amakuni of the period Taīhô (A. D. 701–

703), according to the encyclopædia called Yamato-Setsuyô-Daifuku etc., but has often been left unfollowed. Poor swords have commonly no maker's name, but it is related of some of the most famous makers—for example, Masamune and Yoshihiro—that they would not put their name on a sword, because anybody that understood swords at all would recognize theirs by the quality. With the name on the tang is often given the title and the date, and sometimes the name of the man who ordered the blade; and the name of the sword itself, if it already had one when forged; and again, pithy sayings, or wishes, or poems.

Among the swords here this evening, the long one with the orange-colored scabbard is marked on one side of the tang: "*Idzumo no Kami Fujiwara Yoshitake,*" *i. e.*, "Fujiwara (clan-name) Yoshitake (*nanori*, a personal name), Lord of (the province) Idzumo." On the other side of the tang is written: "*Motte shisubeshi, motte ikubeshi. Inkiyô, Gan, Kô Shi. Kawachi Kusuba no hito, Nakai Mototaka obu;* *i. e.*, "Should die with (it), should live with (it). A. D. 1744. A man of Kusuba, (in the Province) Kawachi, Nakai (family name) Mototaka (*nanori*) wears (it)." On the tang of the short sword with leather-covered scabbard is written: "*Wakasa no Kami Ujifusa, Kei-Chô, yo nen san guwatsu—hi;*" *i. e.*, "Ujifusa (*nanori*), Lord of (the Province) Wakasa. A. D. 1599, third month, —day," on the tang of the very short sword (*heyazashi*), with dragon-flies on the scabbard, is written: "*Wakasa no Kami, Fujiwara Ujiyoshi,*" *i. e.*, "Fujiwara (clan-name) Ujiyoshi (*nanori*), Lord of Wakasa." On the tang of Mr. Culin's long sword is written: "*Bizen* (*no*) *Kuni* (*no*) *sumi Osafune Katsumitsu,*" *i. e.*, "Bizen province inhabitant, Osafune (family name) Katsumitsu (*nanori*)." But Osafune appears by the next sword to be mentioned to be the name of a place. On the tang of a sword formerly owned by Mr. Tatsui Baba is written: "*Bizen Osafune jû Yokoyama Sukekane,*" *i. e.*, "Bizen (province) Osafune (town) inhabitant, Yokoyama (family name) Sukekane (*nanori*)." On the tang of my long sword is written: "*Empô San, Etsu U, ku guwatsu, kichinichi. Geishiu jû Kanesaki kore*(*o*) *tsukuru,*" *i. e.*, "A. D. 1675, ninth month, lucky day. Aki province inhabitant Kanesaki (*nanori*)."

It should be remembered that inscriptions of makers' names are sometimes counterfeited, though not without some slight variations; yet so that a confirmation from other signs is important.

Sometimes the tang shows that the sword has been shortened since it was first made; for example, to accommodate the shorter stature of one who has inherited it. That fact is nothing against the quality of the sword.

d. GRINDING.—The final grinding and polishing of the sword is a trade quite distinct from the smith's. The grinder holds the sword horizontally before him with both hands, protected by cloths wound about the blade, with a narrow piece of the blade uncovered between. He rubs it back and forth on a small whetstone, well wet with water, moving by degrees through the whole length of the blade, except the tang; first, with coarser stones, then with finer, up to four, six, or eight for ordinary work, or, for very fine work, fifteen stones; giving to it many days, and even weeks, as well as great patience, skill, and care. The Japanese whetstones are of excellent quality, and of numerous varieties.

Finally, the blade is polished with a polishing-stone and with a stone-powder as fine as flour, or with the finest powdered steel-forge cinder and oil, as well as with a small, round rod of wrought iron (*migaki-hari*) until the polish is perfect.

The cross-section of the blade should be left convex on both sides; if too thin, or concave on both sides, the edge is easily broken.

Every sword needs a slight grinding from time to time, and the selection of a good grinder is very important; and some grinders have great reputations.

Winter is preferred to summer for polishing, as newly-polished swords are thought to rust too easily in summer.

e. MOUNTING.—The blade may now be mounted with a hilt, and if at least moderately long, with a guard, with a ferrule (*habaki*), and with a scabbard; and the scabbard has certain fittings.

ea. HILT.—The hilt (*tsuka*) is made of wood, often covered with shark-skin, the rougher the better; sometimes with leather. (Fig. 14.) Over the shark-skin silk cord (*tsuka-ito*) is often bound crosswise in several styles (*maki*, *dashi-me-nuki*, *katate-maki*, *hiyo-maki*, etc.). Between the shark-skin and the silk there is often a metallic ornament (*me-nuki*) on either side of the hilt, near the middle, but not exactly opposite each other; apparently useful also for further security of grasp. Sometimes, instead of the silk, there is open-work iron with slightly corrugated surface. The hilt has a small hole (*mekugi-ana*) through it, so as to be held to the tang by a peg (*mekugi*) of bamboo, or by a metallic rivet, that has sometimes a small ornament over each end. The hilt has at its outer end a ferrule (*tsuka-kashira*) of iron, or of some more valuable metal or alloy. There is also a metallic ferrule (*fuchi-kashira*) at the end of the hilt, towards the guard. It is sometimes made highly ornamental, and may have its maker's name inscribed on the part that is hidden. For example: the *fuchi-kashira* of my long sword bears the maker's names, as follows: "Gakô-Shi (*gô*, or pen-name) Minamoto (clan-name) Nagayoshi (*nanori*)," and then his *kaki-han*, or written seal, a kind of monogram constructed of abbreviated characters.

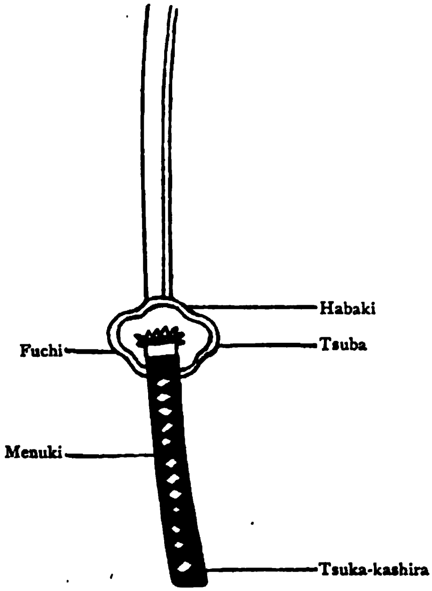


FIG. 14.—THE HILT (TSUKA).

The owner of several sword-blades sometimes has one hilt serve for more than one of them, by turns; so that in the case of Mr. Baba's sword here to-night there is only a rough, unvarnished hilt and scabbard, to protect it from rust while not in use.

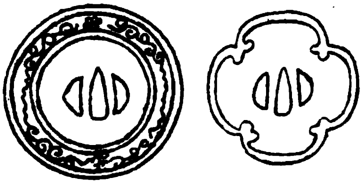


FIG. 15.—THE GUARD (TSUBA).

eb. GUARD.—The guard (*tsuba*) is put upon the *wakizashi* and larger swords, but not on the shorter ones. (See fig. 15.) It is made, preferably for use, of steel or the hardest wrought-iron; but for ornament other metals are used, and on some very small swords it is made of wood. It is sometimes a work of fine art, and then often has its maker's name engraved upon the concealed part of it; of course, quite a different man from the smith who made the blade.

On either side of the guard there is a metallic washer (*seppa*), and sometimes two, a thicker one (*ôseppa*) and a thinner one (*koseppa*); and perhaps also one of middling thickness (*chiuseppa*). One of Mr. Culin's short swords has the name of the maker (*Hisanori*) of the *tsuba* inscribed on the *seppa*. The *seppa* is sometimes wanting on short swords.

FIG. 16.

ee. HABAKI.—Next to the guard the blade is covered with a metallic ferrule (*habaki*) about an inch long; sometimes, but not always, of the same metal as the *seppa*.

ed. SCABBARD.—The scabbard (*saya*) is made of the wood of the Magnolia hypoleuca (*ho-no-ki*), a wood that is considered to be specially suited to the purpose and incapable of scratching the sword. (See fig. 17.) Outside, the scabbard is generally lacquered, preferably with black or dark colors; sometimes with gaudy crimson and variegated colors; sometimes with peculiar lacquer, and sometimes inlaid with mother of pearl. Sometimes handsomely lacquered scabbards are protected by leather covers, or with brocade bags. (See fig. 16.) Some scabbards are immediately covered with leather. A plain, unpainted scabbard is sometimes used to keep the sword in when laid away (for instance, Mr. Baba's sword and my long sword).

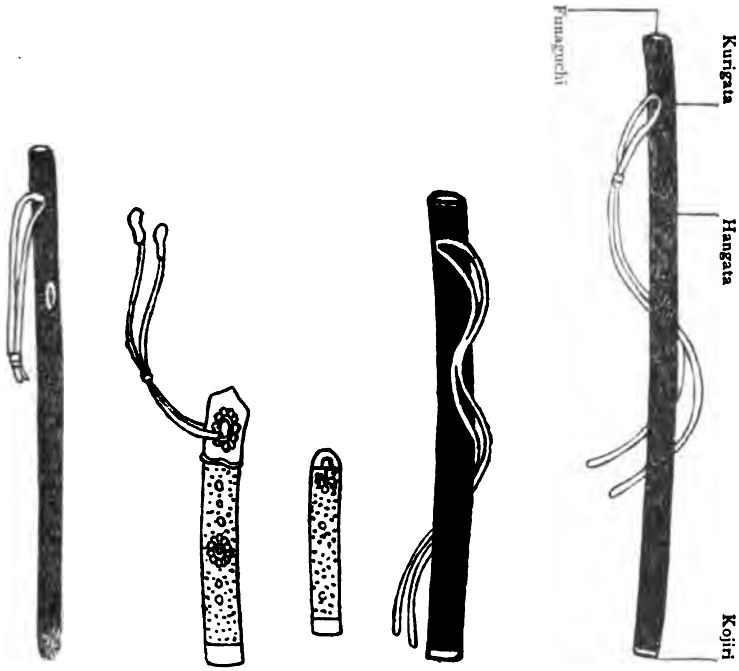


FIG. 17.—SCABBARDS (SAYA) FOR KATANA.

eda. The scabbard has a metallic ferrule (*kojiri*) at its lower end, often very ornamental. (See fig. 17.)

edb. The scabbard also has a small projecting eye (*kurigata*) about two or three inches below its top (see fig. 17) to hold the silken cord, or braid (*sage-o*), with which the scabbard is sometimes slung over the shoulder. The cord is also used for tying up the loose, flowing Japanese sleeves in fighting. The scabbard of the *tachi* requires two projections for the cords or bands, by which it is hung. (See fig. 18.)

edc. Outside the scabbard, near its upper end, there is commonly inserted a small metallic skewer (*kôgai*), if there be no guard; and sometimes, if there be one, it passes through a hole in it. Sometimes the *kôgai* is split lengthwise into two parts (*wari-kôgai*). The skewer is used in the heat of battle to stick through the ear into the head of a slain foe, for the purpose of identification afterwards. Also, the head of the enemy can be carried by it for presentation to the victor's lord. The skewer is sometimes of steel, with sharp edges and point, and can be used as a paper-knife. The split *kôgai* can be used on an emergency as chopsticks in eating food.

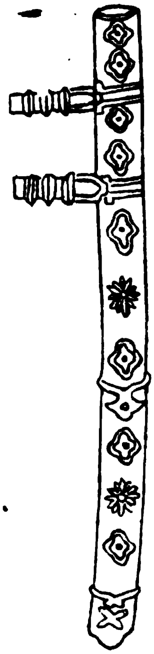


FIG. 18.—SCABBARD FOR TACHI.

Such a pair that we have here this evening is made of the alloy called *shakudô* (see appendix B), and bear a Japanese poem inscribed on them as follows:

Yama mo saku
Umi mo arananu
Yo nari to mo
Ugoki wa seji na
Yamato damashii!

The inscription was probably made when the old conservative patriotic spirit was urging with much excitement the expulsion of foreigners, twenty or thirty years ago. It means very literally: Though even the mountain-itself-rending sea's real condition exist; as for moving, not (so) doing (is) the Japanese spirit. Or:

Though mountain-rending seas assault the land,
The Japanese staunch spirit firm shall stand.

edd. In the outside of the scabbard likewise is often inserted a small knife (*kodzuka*), sometimes called a paper-cutter (*kamikiri*), or simply a little sword (*kogatana*). It is used, as a last resource, to throw at the enemy in battle, and also to cut his throat to make sure of his death when he is down and nearly dead. Its more peaceful use is to cut holes in sheets of paper that need to be bound together, as almost daily happens in Japan. Its blade is a poorly fashioned knife, according to our notions, and is commonly ill-polished and rusty with neglect. It is sometimes inscribed with its maker's name, apparently the maker also of the sword. For example, one of Mr. Culin's short swords has on the blade of the paper-knife the following inscription: "*Hizen no Kami Fujiwara Kuninaga*;" *i. e.*, "Fujiwara (clan-name) Kuninaga (*nanori*), Lord of Hizen." Also on the blade of the paper-cutter of my short sword (*wakizashi*) with a black scabbard is written: "*Tashiro Genichi Kanemoto tsukuru*;" *i. e.*, "Tashiro (family name) Genichi (*namae*, or childhood name) Kanemoto (*nanori*) made it." On the blade of the small knife of my other short sword (*wakizashi*) is written: "*Fujiwara Naoyuki*," the maker's clan-name and *nanori*.

The paper-knife has often a very ornamental metallic handle; and such handles by themselves are now well known in America and applied to other knives.

III. VALUATION.—The value of a sword-blade may be ascertained —1, by actual test of its powers; and 2, by inspection of the signs of its quality.

1. TESTS.—It appears to be customary to test the newly-made sword only by trial upon the corpses of beheaded convicts; or by having them used in the execution itself; or ruffians sometimes used to try a new sword upon beggars or unmartial wayfarers; or even it was tried on a dog, though the use of a sword against brute animals was scouted at.

Huetterott, in the zeal of his thorough investigation of swords, sacrificed a couple of good ones in trying them upon metal. With one good blade of Mino he cut open with one blow, without injury to the edge, five *Tempô* coins piled one on another; in all a full half-inch of thickness of bronze, and an inch and a quarter wide. The same sword struck upon a piece of hard wrought-iron about a quarter of an inch thick and over half an inch wide, cut about an eighth of an inch deep and became notched. At a second stronger blow it cut about the same depth and broke in two at the point struck. A good Satsuma blade could only cut through four *Tempô*, and broke at the third blow on the wrought-iron after getting large notches by the two other blows without cutting very deep; but an inferior Kiyôto sword that could only cut through three *Tempô* endured three blows on the wrought-iron. It may be added that English military swords are tested, when made, by a violent blow on a solid block, with the two sides flat, with the edge, and lastly with the back; then it is bent flatwise in both directions by hand, and finally thrust through a steel plate about an eighth of an inch thick; and about forty per cent. fail to bear the test and are rejected.

2. SIGNS OF QUALITY.—Connoisseurs, and more particularly sword-grinders, with their long experience and close observation of swords in grinding, are extremely, almost incredibly, skillful in detecting the signs of the quality of a blade, and in recognizing the make of the numerous different celebrated masters. The most famous connoisseurs belong to the sword-grinding family of Honnami, who have been the imperial sword appraisers for the past 550 years. The most famous was Honnami Kotoku, in the middle of the 16th century. Honnami Chukei was in 1885 (and perhaps still is) the official representative of the family, and had the skill to decide authoritatively and beyond a question the origin of a sword, as Huetterott found by as many as twenty trials. The official appraisers under the former government had the sole right to make out certificates in regard to swords, writing them on a folded sheet (*orikami*) of special paper (*Kaga-bôsho*), rough large sheets made in Kaga, of which he received 100 sheets a year from the government.

The form of a blade and its point often gives a clue to its origin. What is more difficult, the quality of the metal, as shown by the particles on the surface of the well-polished blade, may also give some clue to the province and age of the sword.

The appearance of the *yakiba* (baked edge) has an important bearing on the quality. Though the more distinct are its whitish color and the bluish of the rest of the blade, the better the metal and its forging; yet the limit between the two colors should not be hard and sharp, but softly bounded, which is partly caused by a weak, cloudy glimmer in irregular spots (called *nioi*) along the union of the brighter hardened and the dark unhardened portions. Partly in the one, often to the very edge, and partly in the other, they are found in all blades, and only in a very poor blade are rare. They arise during the hardening, and in various number and character according to the quality of the metal and of the forging and to the temperature of the last heating; and cannot be counterfeited. It is in general thought well that they should not be uniformly scattered, but in thicker and thinner groups, like the clouds in the sky. Grouped in larger spots, they are called *nioi-buka*. See Huetterott's plate xxiv.

If the loam covering, while moving the blade back and forth during the heating, becomes thinner in some spots or loose, so that the heat of the fire and subsequently the chilling of the bath work more strongly, there arise in the surface of the blade isolated cloudy spots called *tobi-yaki* or *yu-hashiri*. They cannot be produced on purpose, are rare, and are seen with satisfaction.

The "grain" on the surface of good swords should be soft and tender, "as if water rippled over the metal."

A certain degree of heat very favorable for the hardening, as well as especial success in the chilling, produces on the surface of the lighter colored hardened edge very minute shining points called *nie*. According to some they arise from bubbling in the water. They are often very difficult to perceive, and sometimes even a connoisseur requires a magnifying glass to discern them. They are reckoned a sign of good quality, and occur on most of the better blades, and especially in large number on Masamune's. Large *nie* are called *ara-nie*.

On many, though not all, good blades, and especially on those of Bizen, but never on bad blades, there appears a weak glimmer, called *utsuri* (not to be confounded with the *nioi*), running parallel to the hardened edge inside the darker metal, "like the colors of the rainbow and the halo of the moon."

Huetterott learned to detect all the foregoing signs, but was unable to perceive still others that the connoisseurs described, as follows:

Chikei, weak, quite small cloud specks or points along the boundary of the hardened edge; in appearance like *nioi*, in shape like *nie*.

Inadzuma (lightning) extremely fine shining lines in the *nioi* spots.

Suna-gashi, such lines but formed of countless minute points, "like marks on sand that has been swept."

Uchi-yoke, a narrow local glimmer at the border of the hardened edge, similar to the *utsuri*.

Neither the quality nor the quantity of any one of all these signs is decisive, but rather their combination.

As regards the money value of a fine sword, Mitford, in 1871, says, nobles sometimes wore blades "worth unmounted from £200 to £300," say $1,000 to $1,500. Of course, since the wearing of swords has been forbidden the demand for them and their price have greatly fallen.

B.—HISTORY.

The history of swords may be considered, 1, in a general way, and 2, illustrated by lists of famous sword-makers.

1. GENERAL.—One name given by the Japanese to Japan is the land of many blades, and it is claimed that the first sword (*tsurugi*) was invented by the same god that invented poetry (perhaps a compensation). A certain god struck the eight-clawed great dragon on the tail, nicking the sword, but drew out of the tail a marvelous blade that was called the Clustering-cloud sword, and that was made one of the Mikado's three divine insignia (curved jewel, sword, and mirror). It was also called (see *Anderson's Catalogue of Japanese Paintings, etc.*, p. 141) *Kusanagi no Tsurugi*, or the Grass-cutting Falchion, because Yamatodake, son of the Emperor Keikô (A. D. 71–130) used it to cut the grass around him when his barbarian enemies tried to burn him up at the foot of Mount Fuji. At length the tenth mortal Emperor Suijin Tennô (A. D. 192) is said to have had it deposited in a temple, keeping for himself an imitation made by the first recorded human swordsmith, Amakuni of Uda in Yamato. But the oldest known swords, some of them still extant, were made by another smith of the same name and place, apparently the first authentic swordsmith of Japan, about A. D. 702. He already made one-edged swords (*katana*).

The Emperor Gotoba-In, who came to the throne in 1184, greatly favored the art of sword-making and even practiced it himself. The art flourished especially in the 13th and 14th centuries, the age of the best swords, up to the present time. In general the art flourished in times of many wars. For the past three hundred years, since the beginning of the last dynasty of Shôguns, Japan has been mainly at peace and skill in sword-making has somewhat declined. The term old swords is (or used to be) applied only to swords made before this long peaceful period—that is, before 1603.

Until 1682 (*Wakansansaidzue*, vol. 21, fol. 17) it appears that there was no restriction in regard to the number of swords worn by anybody, and that it was common for military men to wear three swords, including the short dagger, called the mail-piercer (*yoroi-tooshi*), besides the *katana* and *wakizashi*. In that year the law was made that military men should wear the *katana* and *wakizashi*, but that farmers, mechanics, and merchants should only wear one *tantô* (dagger). About 1874 it was forbidden to the public to wear swords at all; after a few years of permitted neglect of the custom.

2. FAMOUS SWORD-MAKERS.—McClatchie says the four most famous sword-makers seem to be Munechika (A. D. 900–1000), Yoshimitsu (about 1275), Masamune (about 1290), and Muramasa (about 1340). The most celebrated of these is Masamune and next to him perhaps Muramasa, one of his pupils. For further lists see Huetterott, pp. 115 and 116. The *Yamato Setsuyô Daifuku* gives, with illustrations, the names of a number of the more celebrated makers, and marks by which their swords may be recognized.

C.—CUSTOMS.

The customs in regard to swords may be spoken of under the heads of: 1, their use; 2, their etiquette, and 3, customary beliefs or superstitions in regard to them.

I. USE.—The use of swords consists in, 1, the way of wearing them; 2, swordsmanship or fence; and 3, the care of them when out of direct use.

1. *Wearing.*—The swords are worn in the girdle with the edge upwards and the hilt inclined somewhat towards the right. The shorter swords, without guards, can also be worn concealed in the bosom. The name *kuwai-ken* for ladies' swords implies that they are worn in the bosom; but I saw one, about 1874, worn openly in the girdle as an adornment at a festive gathering.

2. *Fence.*—There are various styles of fencing, and in some of them some attention is paid to thrusting and to protecting the body by keeping the sword before it. Still, with the curved sword, cutting is the principal use, and the body is left much exposed. It is unnecessary here to go into details in regard to the different modes of fencing.

The *tantô* or *ku-sun-go-bu*, or dagger, when grasped with the thumb towards the outer end of the hilt and held up with the edge more or less nearly parallel to the forearm, is said to be an effective weapon against even the long *katana*.

The *wakizashi* was used in the ceremonious suicide by disembowelling (*seppuku* or *hara-kiri*). The *katana* was used in beheading criminals.

3. *Care of Swords.*—Swords ought to be carefully oiled and rubbed from time to time, the Japanese say as often as once in six months, and in the case of very valuable swords perhaps once a month. Otherwise moisture from the air condenses upon them and produces rust. Above all they ought not to be kept uncovered by a scabbard of some kind. Occasionally in the course of years they should be slightly reground.

II. ETIQUETTE.—Some Japanese have said, according to McClatchie, that men of high birth wore the sword so that the hilt pointed straight upwards, almost parallel with the body, while the common people stuck it horizontally in the belt, and ordinary military men wore it in a position about half way between those two. He further says: To draw a sword from its scabbard without begging leave of the others present was not thought polite; to clash the scabbard of your sword against another was a great rudeness; to turn the sword in the scabbard, as if about to draw, was tantamount to a challenge, and to lay your weapon on the floor and kick the guard towards another was an intolerable insult that generally resulted in a combat to the death.

Pfoundes says that "the rules of observances connected with the wearing of the long and short sword or the single sword are most minute, but have fallen into disuse. . . . In former days the most trivial breach of these minute observances was often the cause of murderous brawls and dreadful reprisals. . . . To express a wish to see a sword was not usual, unless, when a blade of great value was in question; and then a request to be shown it would be a compliment appreciated by the happy possessor. The sword would then be handed with the back towards the guest, the edge turned towards the owner and the hilt to the left, the guest wrapping the hilt either in the little silk napkin always carried by gentlemen in their pocket-books, or in a sheet of clean paper. The weapon was drawn from the scabbard and admired inch by inch, but not to the full length unless the owner pressed his guest to do so, and then, with much apology, the sword was entirely drawn and held away from the other persons present. After being admired, it would, if apparently necessary, be carefully wiped with a special cloth, sheathed and returned to the owner as before."

A guest, on entering a friend's house, if the host was an older man or of higher rank, would take off his longer sword and either lay it down at the entrance or hand it to the servant who admitted him, and who would place it on the sword rack in the place of honor in the parlor. If on somewhat familiar or equal terms with the host, the guest might carry the long sword into the house detached with its scabbard from the belt and lay it on the floor at his right hand, where it could not be drawn. "The shorter sword was retained in the girdle; but in a prolonged visit both host and guest laid it aside."

Miss A. M. Bacon, in her excellent book on *Japanese Girls and Women*, Boston, 1891, says, p. 201: "To use a sword badly, to harm or injure it, or to step over it, was considered an insult to its owner."

Many gentlemen of importance had their long sword carried for them, in the house, or at other times when not needed, by a boy or a young woman, who knelt or stood a short distance behind him to one side and held the sword in its scabbard upright. "On journeys the gentleman's sword-bearer carried the honored blade covered with a sword case (*shiki-hada*) of leather or cloth emblazoned with the owner's badge."

III. Superstitions.—It is often said that Masamune's swords are so fine that they will cut a hair falling in the air; or cut in two the very hard-skinned adzuki bean as it falls; or if held in a stream will cut in two a sheet of paper floating down. Mitford relates (vol. I, p. 113) that "the swords of Muramasa are said to be so finely tempered as to cut hard iron like a melon, yet have the reputation of being unlucky, and are supposed to hunger after taking men's lives, and to be unable to repose in their scabbard. . . . They madden their owners, so that they either kill others indiscriminately or commit suicide. At the end of the 16th century, Tokugawa Ieyasu was in the habit of carrying a spear made by Muramasa with which he often scratched or cut himself by mistake. Hence the Tokugawa family avoid girding on Muramasa blades, which are supposed to be specially unlucky to their race. The murders of Gompachi, who wore a sword by this maker, also contributed to give his weapons a bad name.

"The swords of Tôshirô Yoshimitsu, on the other hand, are specially auspicious to the Tokugawa family, for the following reason: Ieyasu, after a certain defeat, wished to commit hara-kiri with a dagger he wore, made by Yoshimitsu; but, to his surprise, the blade turned aside. Thinking it must be a bad one, he tried it on a physician's iron mortar that happened to be at hand, and the point entered and transfixed the mortar; so he was once more about to stab himself, when his followers discovered him, took away his dagger, set him on a horse, and compelled him to flee to his own province. After that, he became *Shôgun*, and, ever since, Yoshimitsu's blades have been considered lucky in the family."

There is a legend that Masamune in forging his swords kept time to his hammer blows with the cry, "Tenka taihei! Tenka taihei!" (Peace on earth! Peace on earth!) and his swords accordingly were always used with good omen and with peaceful results. But that Muramasa in like manner kept time with the cry, "Tenka tairan! Tenka tairan!" (War on earth! War on earth!) so that his swords were never satisfied without causing mischief, and could not be returned to the scabbard without drawing blood. There is, indeed, a saying that the swords of Muramasa must never be drawn and returned to the scabbard without making blood flow.

It is said a certain celebrated swordsmith went by the name of "the one-handed smith." He had apprenticed himself to a famous swordsmith and learned from him the whole art of swordmaking, except that the master concealed the precise temperature of the water used in tempering. At length the pupil stealthily watching, burst into the forge and plunged his hand into the water at the very moment the master was about to dip the sword into it. The master with the sword instantly cut off the pupil's hand.

Certain swords have names, as already mentioned, and as occurred formerly in Europe, for example: Excalibur. McClatchie says a sword of great repute in the Taira family was called Little Crow. Last year we spoke of the historic sword that was called Higekiri (the beard-cutter), because when tried in beheading a criminal it cut through the beard at the same blow; and we mentioned, too, that other historic sword called Hizamaru (the knee-sword), because at a like trial it cut through the knee; also the sword in the romance of the *Eight Dogs of Satomi* called *Murasame* (autumn showers), from its magical shedding of water that washed it clean from blood. We have here this evening the sword inscribed with its name, Osoraku, in large hiragana letters on its blade.

"Live with it, die with it," was a true saying; for the sword was the constant companion of the military man, and closely identified with his whole life, with his power to gain a livelihood, and make his life respected, with the defense of his own and his family's good name, of his lord and of his country, with the most highly-honored death possible to him, and perhaps above all, with the savage ideas of the vendetta that persisted in Japan until very recent years—to avenge, however, be it said, rather injury to a master or parent than to himself. It naturally happened, then, as with other men who are closely bound to some inanimate object, as the sailor to his ship, the engine-driver to his locomotive, and the like, that the sword acquired almost personality, and became the centre, not only of attachment, but warm affection. It was so reverenced, indeed, that in the document Ieyasu left for the guidance of his successors he says: "The sword is the knight's living soul."

Happily, however, such progress in civilization is now taking place in Japan that we may expect soon to see the gross notions of the vendetta and other kindred forms of violence that are almost unavoidably inseparable from a universal habit of carrying deadly weapons, as strongly discountenanced there, as they long have been in Western countries, and to find the Japanese sword regarded in its own country as an emblem of rude savagery, as well as of unenlightened military art.

APPENDIX A TO THE PAPER ON JAPANESE SWORDS.

THE JAPANESE METHOD OF MAKING STEEL AND IRON.

Extracts from B. S. L.'s Report of Progress of the Geological Survey of Japan, for 1878, page 59 (published at Tokio, in 1879).

In the region about Minari [in the province of Idzumo] there are eight iron-making places, of which, however, only three seem to be working, namely at Amegawa, a league and a quarter easterly from Minari; Une, the same distance southeasterly from Minari; and Makibara. . . . I went from Minari to the Amegawa works; and Mr. Adachi to those of Une, which I also visited on my way back. . . .

The iron ore used at all the works is [magnetic] iron sand; and is obtained either by cutting down the granite and breaking it up by hand and washing it; or the river sand is washed; or the ore is taken from alluvial ground. The ore from such alluvium is reddish and more fusible than the other kinds, owing no doubt to its long exposure to weathering influences; the ore washed from the rock is next in fusibility; and the ore separated from river sand is the least fusible, probably owing to its being protected by water from the air, or because its weathered surface has been continually worn off. The difficult fusibility is very likely due in part to the presence of titanium. Most of the ore used at Amegawa is brought on horseback from various places over two leagues distant; but is washed again at the furnace and reduced to half its weight. Some ore, however, is washed on the hill-side close by the Amegawa furnace in the winter half of the year, but the rock there is reckoned in general of inferior quality, though some parts are pretty good. Six men work together in one place and produce 800 to 1,000 loads, sometimes only 600 loads (of 24 kamme or 1½ piculs each) in one season of about 180 days, or 1,080 days work; and that amount of ore is likewise reduced one-half by the final washing at the furnace. In one such season, it is said, the six men cut down and wash the rock throughout a length of about 30 fathoms by a width of about 5½ fathoms and a height of 3 fathoms; say 500 cubic fathoms for about 500 loads of 45⅔ tons of the ore of the final washing, or about one-half of one per cent. of the weight of the rock. The only vein of magnetite known is at Hatakeyama in Oomaki village, three leagues south of Amegawa;

but it is only a quarter of a foot thick and is therefore quite unworkable.

The Amegawa iron works are over 100 years old. The only furnace there, like the others of Idzumo, makes both pig iron and steel in one operation of three days; but across the mountains in Bingo with similar furnaces they make, it is said, only pig iron in an operation four days long. The furnace is essentially like the blast furnace of Western countries, but extremely low and with a very long horizontal section and of extremely little durability, as it is built merely of a common yellow clay. The shape is closely like that of the Rachette furnace, a recent invention of Western countries; the size, however, is small. The height is only 3.7 feet, and the width at top 3.2 feet outside or 2.4 feet inside, but the length is 9½ feet outside. The outer sides are battering, and the inner ones still more so near the bottom, so that only half a foot in width along the middle of the bottom is flat. The vertical section crosswise differs then from that of the blast furnace in being widest at the top instead of near the middle. In the course of the operation, however, the inner sides rapidly wear away towards the bottom, so that the section becomes much wider there than at first. The extreme lowness of the furnace can be accounted for by the fact that the minuteness of the particles of the ore enable them to be deoxidized in a very short descent. The great length of the furnace is made up for by a row of nineteen tweers on each side, for which there are elliptical holes 0.2 foot high and 0.7 foot above the bottom outside and 0.5 foot inside; so that the heat is kept up throughout the whole length. The progress of the smelting can also be viewed through the holes at the side of nozzles, and any obstructing slag can be poked away with a small rod inserted there; and at each end of the furnace at the bottom there is a hole 0.4 foot in diameter for drawing off slag and pig iron, and there likewise the smelting can be watched. At the end of the first twenty-four hours that hole is closed and two other similar ones are opened on either side of it near the corners, as the side walls have already become thin. Below the bottom, which is on a level with the ground, there is a layer 0.8 foot thick of ashes of the maki, a conifer (Podocarpus macrophylla); and below them there are 4.2 feet in depth by 3½ feet in width and 9½ feet in length of hot coals; and the five feet together are called the fukutoko, or hearth. Below it is a depth of seven feet filled with red and black clay; from the bottom of which there is a horizontal drain to a neighboring hillside. The whole depth of twelve feet is walled about with half a foot or more in thickness of stone (granite and other kinds). The fukutoko, with the parts below, is permanent, and at some places is not allowed to cool down for a hundred years. The furnace proper is built of wet clay in a day, and dried with a wood fire in the following night.

At three o'clock the next morning the same brands from the wood-fire are removed and the furnace filled with large charcoal, the tweers are adjusted, the coals kindled, and the blast begun. At about five o'clock the charcoal in burning has become about 0.4 of a foot shallower than at first. Then they put on iron sand, perhaps about 16 kamme (133⅓ pounds, or one picul), but not a weighed quantity; then some more charcoal until the top is made level again with the top of the furnace. When the fire has again become about 0.4 foot lower, another picul of iron sand and some more charcoal are put on; and so on repeatedly. The first day and night, ore and charcoal are charged about 33 times in 12 hours; and the second day at about the same rate but growing quicker, so that on the third day there are 42 charges in 12 hours. Throughout the operation, slag is running out at the end-holes of the furnace, and some pig iron, too, called dzuku, which, though variable, amounts to perhaps 180 kamme (1,500 pounds) in all. On the fourth morning at three o'clock (that is, at the end of 72 hours), after having charged in all about 3,800 kamme of charcoal and 3,600 kamme (30,000 pounds) of ore, they stop the blast (which has been continuous) and take away the nozzles. Then they break up the furnace, brush off the coals that remain on the mass of metal that has been produced, and let it cool. The mass is steel, but the outside of it is bad steel called kera; below it there is melted pig iron, or dzuku, which on the removal of the steel mass cools and becomes solid at once. The steel mass weighs about 540 kamme (4,500 pounds), of which two-thirds are good steel and the rest kera. The two are separated with the hammer. The dzuku weighs about 360 kamme (3,000 pounds), or together with the previous 180 kamme (1,500 pounds), about 540 kamme (4,500 pounds) in all; making the whole product then about 1,080 kamme (9,000 pounds or about four tons) or 30 per cent. of the ore. With a larger furnace sometimes 1,200 kamme are produced. When the metal has been cooling a couple of hours, at about six o'clock in the morning the steel mass is pulled out and then immediately the dzuku. The dzuku without further cooling is thrown at once into a small pond of water close by, and is afterwards broken up with hammers. The hot steel mass is likewise thrown into water at some places, but not here; and, after cooling, it is broken up into small bits. The same day that the metal masses are removed the furnace is rebuilt, so that on the fifth day the blowing recommences. In a month, then, there are seven or eight operations, except when occasionally there are interruptions from disordered apparatus. In a year there are about 70 operations with a vacation of two months in the hottest part of summer. The dzuku and kera both go to forges in other villages; Komuri, two leagues distant; Komaki, two leagues; Yakawa, three leagues; Maki, three leagues; Sumoni, two leagues, and are converted into bar iron there, yielding about 62½ per cent. [by processes closely similar to those of Western countries, with bloomary and chafery forges]. The dzuku is sometimes made in other villages into good cast iron by means of twice remelting.

The blast is given by a pair of wooden bellows on each side of the furnace, and they are like the bellows of an oil well, except that they are in two halves, end to end, with the hinges on the top boards at the outer ends, so that the man who treads them stands in the middle and steps first on one board and then on the other. The boards are each five feet long by three wide and rise and fall at the inner end about 1½ feet. The work is so severe that the men are relieved about once an hour, and in the twenty-four hours there are three sets of men, or six men in all. The nozzle is chiefly of bamboo, about 0.15 foot in diameter, but at the furnace end is of iron for a length of about two-thirds of a foot, and at the very end with an inside diameter of 0.06 foot. The furnace and bellows, charcoal and ore bins, and resting rooms for the workmen are all in a high building about fifty feet square.

Of wood about 2,000 kamme are used in the three days' operation; 1,000 kamme for drying the furnace, and 1,000 kamme expressly for making ashes. For the ashes maki only is used; and it has to be burned green, otherwise, it is said, the ashes are inferior. The ashes would seem to serve as a flux, and at the same time form the bottom of the furnace through which the metal and slag do not penetrate.

The charcoal used is very large, some pieces two or three feet long by half a foot in diameter, but many smaller, and it is broken up a little before putting on the fire. The coals in the fukutoko do not diminish in several years, and when the work is interrupted are kept warm by a mound-shaped charcoal fire on top covered with clay except a hole at one end before which a few sticks of wood burn slowly.

One steel mass (with kera), that I saw, was of irregular shape, about nine feet long by about 3½ feet wide and half a foot thick, including some cinders and ashes on top and slag below, and the dzuku is said to be of about the same shape but much thinner. The kera surrounds the good steel on all sides. The breaking up into small pieces is done partly with hand hammers by eight men, and, in the case of the more difficult lumps, by letting fall upon each of them a mass of dzuku weighing 360 kamme from a height of some ten feet. The mass is raised by means of a rude tread-wheel worked by four men, and falls between a guiding frame-work about 2½ feet square. The twelve men in all do the breaking up in four days, just the time of one complete furnace campaign.

Besides the twelve men who break up the steel (with 48 days' labor) and the six men who blow the furnace (with 18 days' labor), there are two men for charging the charcoal and two for the ore (twelve days' labor) and twelve men for building the furnace (twelve days' labor), so that there are in all ninety days' labor for each operation.

The cost of labor is very low, because strongly attached old family retainers are employed. The bellows' men and steel breakers average about nine cents a day, including four cents worth of rice (one shoo). It is owing to such low wages that the works still succeed no worse. At washing the ore of the hillside near the furnace about ten cents a day are earned. Ore brought from a distance is bought at about 14 cents for a load of 24 kamme. After washing again at the furnace and reduction to one-half its weight, it is worth 25 cents a load (so stated, but the two bought loads to make one of the last washing would cost 28 cents); and the yield therefore is at least 3⅛ cents to the cubic yard of such rock as that near the furnace. Charcoal costs about 12 cents for 10 kamme. Maki wood is worth from 2½ to 3 cents for 10 kamme according to quality. The steel sells for about $5 a load of 30 kamme (or $44.80 a ton), or about $60 for the product of one operation, but averaged say $45. A like load of dzuku and of the best kera (yielding 50 or 60 per cent. of iron) brings about $2 a load (or $17.92 a ton) both alike, or say $48 for the whole product of them in one operation. The making of bar iron from dzuku and kera costs, it is said, about $2.70 a load, but with inferior dzuku and kera it costs more. Bar iron sells at Amegawa for $5 to $7 for 24 kamme according to the quality, averaging, perhaps, $6, or say $67 a ton. Dzuku brings $3 a load (or about $27 a ton) at Matsue.

The chief expenses of the 70 operations of a whole year would be:

266,000 kamme charcoal, ...	$3,192
140,000 kamme wood, say, ...	385
10,500 loads of ore @ 25 sen, ...	2,625
6,300 days' labor @ 9 sen, ...	567
Clay for furnace building say, ...	70
	$6,839

or $97.90 for each operation, or $24.34 for each ton of product. But something should be added for the wear and tear of tools and of the breaking machine, deterioration of the buildings, cost of superintendence, and interest on the capital.

The whole product for the same year of 70 operations would be 281 tons (75,600 kamme), of which one-third would be good steel. The value of the whole product would be at say $93 for each operation, $6,510 (or at $108 it would be $7,560). The information is not quite precise enough to decide with certainty whether there be any profit or not.

The day I visited Amegawa the furnace was not in blast; and the operation is given as it was described to me on the spot. As such inquiries are unusual there and were unexpected, and the answers had not been specially prepared, it is possible there may in some points be a little inexactness, though evidently no more than under the circumstances was unavoidable. It will, therefore, be well to compare the statements with those obtained at the closely similar establishment of Une and with the observations of the operation there.

The Une Iron Works are 103 years old (since 1776); and they say that the fire has in that time never gone out.

The furnace is 9.3 feet by 3.3 feet, as they told me; but by Mr. Adachi's measurement of the patterns, the outside width at the top was 3.4 feet, the inside 2.7 feet; the outside width at the bottom 3.7 feet, and the inside 0.65 foot. There are twenty tweers on each side. The furnace-house, bellows, and other apparatus are closely like those at Amegawa; and my short visit was at about six o'clock in the evening of the second day of the operation. Each bellows was making about 28 strokes a minute with one-half of the bellows, or say 14 strokes for each pair, and the effort was very violent. For the three days eight men are employed to tread the bellows, and on the second day were changing 12 times in the daytime and about 10 times in the night. On the first day the treading is slower and the changing less frequent; on the third day more rapid and more frequent. They change about once for two charges of the furnace, that is, about once an hour. The treading of the two men on the opposite sides of the furnace keeps time, so that the air rushes in from both sides at once, and the flames (about three feet and a half high) rise slightly higher at that instant.

The iron sand is charged only along the sides near the walls of the furnace, and the charcoal is charged slightly nearer the middle. When freshly charged the charcoal rises slightly (about a quarter of a foot) above the top of the furnace. At the time of my visit they were charging three times an hour, and on the third day they charge still oftener.

The ore charged in one operation of three days amounts to 220 or 230 boxes of 14 or 15 kamme (sometimes 17 or 18 kamme), say 3,300 kamme (but possibly about 3,600 kamme, as at Amegawa). Of charcoal, in the same time, 4,200 or 4,300 kamme are charged; and of wood, 720 or 730 kamme are used for making ashes, and 1,200 or 1,300 kamme for drying the furnace, about 2,000 kamme in all. The ashes have to be made for each operation.

The clay for building the furnace has to be brought from a distance of three-quarters of a mile (11 choo), from land belonging to the furnace owner, and the carriage costs $0.0043 for ten kamme and the digging somewhat more; say in all about one dollar for the 800 or 1,000 kamme that are needed for a furnace.

There is always some slag with the dzuku at the end of the operation below the level of the bottom of the furnace, the ashes and coals beneath having become somewhat depressed, but it does not penetrate the ashes.

The whole product of one operation is from 720 to 1,020 kamme (6,000 to 8,500 pounds), or about 30 per cent., as at Amegawa, sometimes 1,200 kamme (10,000 pounds); of which the dzuku varies from 90 to 480 kamme (750 to 4,000 pounds). There are about sixty operations in a year, but the number varies in different years. They are idle in July and August, and in 1878 began blowing on the seventh of September. They say that in the hot weather the metal does not melt so well as it does in the cold, probably the labor of treading the bellows so rapidly is too severe in hot weather; but the draft upward from the fire would be slightly less active and the air slightly rarer.

In Bingo, where with a four days' operation dzuku alone is made, the furnace is said to be longer and narrower, about 10 feet by 2.8 feet. If the furnace is narrow there is less charcoal, and so not enough heat for steel, they say; but for dzuku alone less charcoal is needed. The tweers are about 20 (18 to 21) on each side of the furnace and are a little smaller than for making steel. The dzuku is drawn off in a melted state by the holes at the end of the furnace. In other respects, they say, the Bingo process does not specially differ from the Idzumo one.

As the Japanese method of making pig iron from sand ore is the only one successfully practiced in any part of the world, and as the amount of such ore in Japan seems to be very large indeed, it is worth while to consider whether the process cannot be so improved as to be more decidedly profitable. The whole cost of the steel and pig iron product appears to be made up mainly in the following proportions:

Charcoal,		46⅔	per cent.
Ore,		38⅓	" "
Labor:			
Breaking,	4½		" "
Blowing,	1½		" "
Charging,	1		" "
		7	" "
Furnace:			
Wood for drying,	4		
Clay,	1		
Labor,	1		
		6	" "
Wood for ashes,		2	" "
		100	

Evidently the cost of fuel and ore are far the most important items. It must be borne in mind, however, that nearly all the remaining fifteen per cent. are only about half-price, owing to the exceptionally low wages paid at the iron works. It seems clear that much economy might be effected as regards: 1st, washing of the ore; 2d, the carrying of the ore, fuel, and other materials; 3d, the fuel; 4th, the flux; 5th, the breaking of the metal; 6th, the blast; 7th, the furnace building.

APPENDIX B TO THE PAPER ON JAPANESE SWORDS.

SHAKUDÔ.

From the *Wakansansaidzue*, Vol. 59, fol. 15.

Shakudô has a purplish black color. Shakudô is written with characters that mean red copper; but whence comes the character red is not clear. The mode of preparation is as follows: To 100 momme in weight of copper add 30 momme of shirome [" the best quality of tin," but the same word is now used for antimony], and melt; the product is called nikurome. To 100 momme of the nikurome add 4 sen [*i. e.*, apparently 4 momme] of gold, and melt. Then steep the product in four half pounds [or one quart] of vinegar with four momme of rokushô [blue vitriol] and one shoo [nearly two quarts] of water, and the black color appears.

Imitations are made with merely copper steeped as above mentioned; or by exposing it to sulphur smoke.

President Brinton spoke as follows, on

"INSCRIPTIONS FROM EASTER ISLAND."

"Easter Island," he said, "presents a curious phenomenon. It is 2,100 miles from the coast of South America, and 1,000 miles from the nearest inhabited land, Pitcairn Island. Discovered about 1680, its inhabitants were found in possession of a civilization in advance of that of neighboring islands. A most curious feature was large statues that were found upon platforms overlooking the ocean. The number of these is not yet estimated. The largest, according to Surgeon George H. Cooke, U. S. N., is an unfinished obelisk, 69 feet 9 inches in height. The art of the rudiments of writing was understood by the inhabitants, an art not understood by the people of any of the other islands."

Copies of the inscriptions were then exhibited. "These," Dr. Brinton said, "were usually cut into wooden slabs, with sharp fragments of obsidian, and were also painted upon the walls of their houses and temples. They were used for various purposes: to record genealogies, to send messages, and as ornaments on shields. Information was sent, by means of them, from one part of the island to another, but a knowledge of the writing was confined to a very limited class—the kings and the priests. The German steamer 'Hyäne' visited the island in 1883, and found the message-sticks still in use and understood by an old chief, Hangeto. The general character of the writing is illustrated by a genealogical scroll, made some years ago by one of the Spanish visitors, a copy of which I exhibit. Most of the writings are genealogical tablets.

"The art was confined with them to picture or symbol-writing. Each picture conveys a definite idea, and the pictures were usually of objects most familiar in fact or theory, as certain mythical animals they believe in, or certain of their gods. Those relating to the sexual relation are the most prominent. Their principal god is *Mäke-Mäke*, a bi-sexual divinity represented by a figure of two sea-birds. Their principal weapon of war is in the form of a paddle, which terminates in a phallus.

"The name of the island is differently interpreted. Surgeon Cooke, who visited the island in 1886, gives the name by which it is known to the natives as *Tepita te Henúa*, 'the navel and the womb,' and *Rapa* *nui* as the name given to it by the Tahitians. *Rapa nui* is said to be the proper name. The island has an area of 34 square miles. Thirty years ago it had 3,000, but now it has only 155 inhabitants. According to the first account, it had 20,000 people, but this number is probably exaggerated. The statues on the sea-coast are all very much alike. They are not ancestral, and not all phallic. Each has an appropriate name. According to Captain Geiseler, of the 'Hyäne,' they are all of native Polynesian construction."

MAY 1ST.

Mr. Culin spoke at length with reference to the Society's pressing need of a more suitable hall for its meetings, and a discussion of the subject followed.

MAY 12TH.

A special meeting was held this evening, at the written request of seven members, to consider the question of purchasing a house for the Society.

Mr. Thomas Hockley, of the Committee appointed March 6th, stated that the Committee had examined a number of properties, among which the most desirable was the house at the southeast corner of Twenty-first and Pine Streets.

MAY 17TH.

A special meeting of the Society was held this afternoon, at No. 205 South Sixth Street.

The Committee appointed to secure better accommodations for the Society reported, through its Chairman, Mr. Jordan, that it advised that authority be given to it to purchase the house at the southeast corner of Twenty-first and Pine Streets. This report was accepted, and its recommendations authorized.

JUNE 9TH.

A special meeting of the Society was held this afternoon, at No. 205 South Sixth Street, at which it was reported that the purchase of the house at the southeast corner of Twenty-first and Pine Streets had been consummated, and the following Committee was appointed to solicit contributions, to be applied to paying off the indebtedness: Francis Jordan, Jr., Thomas Hockley, Carl Edhelheim, Cornelius Stevenson, and Stewart Culin. The following Building Committee was also appointed: Thomas Hockley, Francis Jordan, Jr., and Cornelius Stevenson.

JUNE 26TH.

A special meeting of the Society was held this afternoon, at No. 205 South Sixth Street. Mr. Wilson Eyre exhibited plans he had made, at the request of the Building Committee, for a new building for the Society, upon the site of the existing building at the south-east corner of Twenty-first and Pine Streets.

OCTOBER 2D.

It was concluded to defer the permanent improvement of the property recently purchased by the Society, and the Building Committee was authorized to have necessary alterations made to the existing building.

NOVEMBER 6TH.

The stated meeting was held this evening at the house of the President, Dr. Daniel G. Brinton, No. 2041 Chestnut Street. President Brinton delivered an account of the recent Congress of Americanists in Paris, in which, after dwelling upon the most striking features of the Congress, he referred to the entire forgetfulness of national antagonisms as one of its most gratifying features, and spoke of the important aid rendered by science in doing away with such enmities and bringing about harmonious relations between all peoples.

DECEMBER 4TH.

The stated meeting was again held at the house of President Brinton.

Dr. Robert H. Lamborn exhibited two silver coins of the short-lived kingdom of Etruria, which are said to be among the finest examples of modern coinage.

Mr. Culin exhibited a number of Roman coins of Marcus Aurelius, Domitian, and Antoninus Pius, found in the well of St. Albans, near Roanne, in the Bourbonnais, France, where they had been thrown as votive offerings.

President Brinton exhibited two stones resembling stone axes, which had been picked up on Rye Beach, N. H. One of them resembled a small stone axe so closely that it was difficult to say whether it was the work of man or the result of natural forces. The groove followed a soft striation in the stone and was slightly sloping, from which it was concluded by the members present that it was a natural formation.

President Brinton, in commenting upon the paper read by Prof. Frederick Starr at the recent meeting of the American Folk-Lore Society in New York City on the Folk-lore of Stone Implements, stated that in New Jersey the belemnite, a fossil found in the marl, was there known as "thunder stone," the term by which stone axes are so generally known. President Brinton exhibited a collection of objects consisting of flint chips, an argillite implement of very pure shape, and some pieces of pottery from Peter's Island in the Schuylkill River. Dr. Brinton also exhibited a manuscript copy of the first book of Sahagun's *History of Mexico* from the original MSS. in the Medicean library in Florence. This precious object, the existence of which was first publicly made known by Dr. Brinton, was compiled by Sahagun from the original Aztec records. It consists of twelve books, written in Nahuatl, with a Spanish translation. The latter is very free and much abbreviated. It is illustrated with no less than 1,300 pictures, colored in the symbolic manner peculiar to the ancient Mexicans. The volume exhibited consisted of the Nahuatl text of the first volume, which treats of the Mexican gods, with copies in color of the original pictures made by a skillful artist in Florence, under the direction of the present owners. The original remains unpublished, and this is the first and only copy ever made.

In a discussion that followed the exhibition of this work, the opinion was expressed that no more important contribution could be made to any of our libraries in the interest of students of American antiquities than the reproduction of the remaining volume of this work. An offer to defray one-third of the expense of such a reproduction was made. A valuable collection of coins, comprising the most important addition to its cabinet received in recent years, was presented to the Society by Francis C. Macauley, Esq. This collection, numbering 1,385 specimens, comprised a large number of Roman coins, notable for their perfect condition, some interesting specimens of mediæval coinage, modern European and Oriental silver and gold pieces, and a quantity of American silver, much of the latter being proofs. A special vote of thanks was tendered to Mr. Macauley for his gift.

1891.

JANUARY 8TH.

The first meeting of the Society in its new Hall, southeast corner of Twenty-first and Pine Streets, was held this evening with President Brinton in the chair. Mr. Francis C. Macauley presented a French gold coin, which was comprised in a treasure found in tearing down an old building on the site now occupied by the banking house of the Crédit Lyonnais in Paris.

FEBRUARY 5TH.

Mr. Culin read the following paper, entitled

"EAST INDIAN FORTUNE-TELLING WITH DICE."

There is a popular notion that the East, especially India and China, is still the repository of many valuable arts and sciences that are unknown in Europe. Indeed, there is a widely-spread belief that if we could but penetrate its mysteries, Asia would reveal to us rich treasures of knowledge, wherein we should find anticipated many of the discoveries of modern science.

It is hinted even by some of the more scholarly that traces of a secret learning, embodying higher conceptions of the universe and its phenomena than those with which we are acquainted, are to be found in the ancient philosophies and religions of the Orient, and stories are frequently related of the apparently supernatural control which Indian adepts obtain over the forces of nature by means of their extraordinary and mysterious knowledge.

It is not for me to assert that Asia has not its lore, and lore, too, of which we know absolutely nothing; for I am assured it has sciences and philosophies and secret doctrines of which we do not even know the names, and which, no doubt, will be lost and perish utterly, without attracting more than a passing glance from Western scholars. But I am skeptical as to their value, save as illustrating the possible vagaries of the human mind, and regard the notions about the learning of the East as a popular delusion, so far as that learning is supposed to transcend the deductions of Western scholars. It is to a few pages, however, from the occult lore of the East, of India, the treasure-house of mystery, that I intend to turn, and present to you an account of the methods of divination with dice as there existing at the present day. Whatever may be its interest, and serious value I can hardly claim for it, the subject has at least the advantage of novelty, for I hazard little in saying that until the present moment its secrets have never been revealed for criticism and discussion by Occidental scholars.

The custom of telling fortunes with dice is universal throughout India, where it is regarded as a science under the name of *ramala*, and is practiced as means of livelihood by a large number of persons who are called *ramali*. The science, so-called, is popularly believed to be of great antiquity, and is said to have been founded about 6,000 years ago by *Garga*, who wrote many treatises on *jyotis*, "astronomy," as well as on the subject of *ramala*. To him is attributed the authorship of the work entitled *Prasna-manorama*, to which further reference will be made.

The literature of *ramala* is very extensive, and, according to Swami Bhaskara Nand Saraswati, to whom I am indebted for the information contained in this paper, amounts to over 2,000 works, comprising over 100 different systems.

In early times, he says, *ramala* was not much resorted to, and its great popularity dates from the Mohammedan conquest. It is now current alike among Hindus and Mohammedans. The Hindus use dice made of sandal-wood; the Mohammedans prefer those of metal, combining silver, gold, zinc, iron, brass, copper, and mercury into an alloy for the purpose. The Hindu fortune-tellers pray to Çiva and the Mohammedans to Azrael. Among the Hindus, a person who tells fortunes is called a *jyotiei* and among the Mohammedans a *ramala*.

The dice used in telling fortunes are called *ramala-pâsa*, and differ from the *pâsa* or dice used in playing games, and also vary in shape and marks, according to the system in which they are employed. In all of the systems, so far as I have been able to ascertain, the general procedure is much the same. The inquirer throws the die or dice once or oftener, and the number representing the throw or the sum or multiple of the throws is referred to a book, in which, under a corresponding number, an answer is found. These books were formerly treasured by the *ramali*, who kept them to themselves. Within recent years they have become accessible to every one through printed copies, several of which, illustrating different ways of telling fortunes, were placed in my hands by Mr. Nand.

One of them is entitled *Prasna-manorama* and bears a Calcutta imprint of 1880. Its authorship is said to be disputed, some attributing it to *Garga*, and others to *Pārāçāra*, who also lived, according to current Indian tradition, about six thousand years ago.

Before proceeding to describe the method of employing it, a few words might be said as to the mode of procedure on visiting a fortune-teller. It is customary to go to him early in the morning. The visitor having requested his services and put, we will say, four pice in his book, the *ramali* prays to Çiva, and entreats the god to come hear and aid him with his power. The *ramali* then requests the inquirer to name one of his hands "gold," we will say, and the other, "silver," and throw the dice. He will thereupon endeavor to tell him which he named "gold," and which "silver." Or he will ask him to think of the name of a flower, as "rose" or "lily," and in the same way, ostensibly from the numbers thrown, informs him which particular flower he thought of. The Swami asserts that the fortune-teller is usually successful, and, in point of fact, he himself succeeded in experiments made with the writer. These preliminaries serve to impress the inquirer, and inspire him with confidence. The dice used in connection with the *Prasna-manorama* are three in number, and consist of square prisms of sandal-wood, about three inches in length, marked with dots, from 3 to 6, on the sides. The *ramali* gives them to the inquirer, and enjoins him to pray seven times to Çiva, and throw the *pāsā*, which are rolled on the palm of the right hand outward from the thrower. The *ramali* notes the sum of the faces of the three dice, and, the operation being performed three times, and three numbers obtained, he refers to the text under these numbers in his book, for an answer to the question that was propounded. This question was not supposed to have been known to the *ramali*, but the inquirer is expected to keep it in mind when he throws the dice. This method my informant regarded as superstitious, but the following one, in which the *Prasna-manorama* is also used, he considered more certain. Indeed, he related that once, when expecting a letter, he went in a spirit of fun to a *ramali*, who told him his letter would arrive in three days, at 11 o'clock, and on the very day and hour, as predicted, he received the letter. Çiva is appealed to, and the three *pāsā* thrown, as before. The *ramali* adds the numbers on the two dice farthest from the thrower, and multiplies their sum by the one nearest the thrower. This is performed three times, and the book consulted each time, as before.

The sum of the three results is then taken and compared with the corresponding numbers in the book. Thus, if the three throws are 6, 6, 4; 6, 5, 4, and 4, 6, 4, the calculation may be represented as follows:

$$(6+6)\times 4 = 48$$
$$(6+5)\times 4 = 44$$
$$(4+6)\times 4 = 40$$
$$48+44+40 = 132$$

and the significant numbers will be found in the columns on the right.

There is still another way of telling fortunes by means of the *Prasna-manorama*. According to this method, the number 438, which represents sums of the numerical values which the fortune-teller attributed to certain letters of the Arabic alphabet, is multiplied by the total of the first throw with three dice; the second throw subtracted from this result, and the remainder divided by the third throw. The quotient will be the number under which the correct answer should be found in the book, and the remainder will be a significant number, and indicate a number of days, weeks, months, or years, or whatever numerical term is expected in answer to the question. The answers in the book are direct in their character, and are preceded by a question which should be the one asked by the inquirer. Thus, under 440: "You ask me how many days before you will make a large sum of money. The dice answer that you will not make money very soon." The answers do not always fit the question originally propounded. According to the fortune-tellers, the questions asked by the world are of three kinds, concerning:

dhātū, meaning "money."
jīva, meaning "life."
mūla, meaning "land."

If the seeker into the future does not appear to be satisfied, the *ramali* may verify his answer by adding the last remainder to the quotient and referring the sum to the book. If the answer given under that number is of the same kind as that under the first one, the *ramali* is assured that he has answered the question propounded. He may still further confirm his reply by having the inquirer throw the dice once more, and if the answer in the first part of the *Prasna-manorama*, corresponding with the throw, is of the same kind as the original answer, the latter must refer to the subject under consideration. If it is of a different kind, the fortune-teller makes another effort.

Another treatise, entitled *Nitidarpana*, or the "Mirror of Conduct," is said to have been written by Sridhara, whose name means "luck-carrier." It was translated into Hindustani from the Sanskrit about twenty years ago. The copy shown to me was printed at Agra in 1881. One die is used with it, consisting of a square prism of red sandal-wood marked on its sides with the Sanskrit numerals from 1 to 4. In using it the *ramali* prays to Çiva, and requests the inquirer to throw the die three times and keep his question in mind.

The *ramali* writes down the number of each throw, putting the first in the hundreds' place, the second in the tens' place, and the third in the units' place, so that the three throws may be read as a number composed of these elements. Thus, if the throws are 2, 1, 2, he reads them as 212, and refers to the corresponding number in the book. In this system affirmations are used, which are equivalent to questions, and must be approved or negatived by the inquirer, such as "You have received a letter within three or four days?" "The person who wrote the letter lives within 100 miles?" The *ramali* looks under the number, as 212, and proceeds according to the book, which provides for both affirmative and negative answers, until he has asked 12 questions, when the 12th question or affirmation is regarded as an answer to the question propounded.

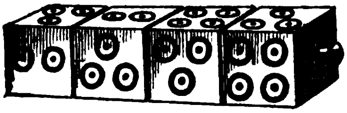
There is yet another method in which an entirely different kind of dice are used. It is set forth in a work entitled *Parisapaksi*, which is said to have been written by Çiva. The copy shown to me was in Sanskrit, in three large octavo volumes, printed in Calcutta in 1883. This book is divided into chapters, each treating of a different subject, for which the method of procedure is described. Some of the subjects of inquiry are as follows:

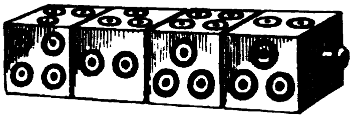
The number of years a person will live.
The age of a person.
The number of times ill.
The number of times in danger.
Whether a person has traveled.
The number of his brothers and sisters.
Whether his parents are living.
What he ate to-day.
What he did to-day.
The name of the flower that is thought of, and so on.

The dice employed in this system are eight in number, and are strung, so as to rotate easily, on two metal rods, four on each. The rod passes through the centre of two unmarked sides, the other four sides of each die being dotted from 2 to 4. The set here exhibited are ivory, and were made for the writer in Lucknow. They agree in arrangement and marks with two sets of metal dice, presumably Oriental, in the Sommerville Collection in the Museum of the University of Pennsylvania.

As an illustration of this system I shall give two examples of its employment by Mr. Nand in answering questions propounded by the writer. The first question was, "How long shall I live?" I threw the dice, tossing them outward on the palm as before, and the sum of their upturned faces was 25. He referred to the book and said: "When you were 12 years old you were in danger from water. It was near your birthday, and two boys were with you. You were swimming and your companions saved you. One of the boys lived near to you—next door to your home. The other boy lived farther away. One of them was your schoolmate. The same boy gave you a pearl knife."

At his request I threw the dice again. The result was 21. He referred to his book, and said, "Between your nineteenth and twentieth years you were sick for two weeks—not very sick."





I threw the dice again. Their sum was 23. He said, "Between your twenty-first and twenty-second year, one of your friends died."

At his request I again threw the dice. By this throw, he said, he would answer my question. One of the sets came up 12, and the other the same. Taking the sum of the two sets ($12 + 12 = 24$) he asked my age, thirty-one years, which he added to the result ($24 + 31 = 55$). He then asked me to think of a number, whatever number I would. I suggested 300. He thereupon added 27 to the last result ($55 + 27 = 82$) and divided 27 by 5, and subtracted the quotient and remainder from the last addition ($27 \div 5 = 5$, with 2 remaining; $82 - 5 = 77$; $77 - 2 = 75$). The result, 75, he declared to be the number of the years of my life. He afterward informed me that 27 was always added when the person was asked to think of a number, no matter what their guess might be, unless they chose a number less than 27, when that lesser number was substituted. The number divided by 5 was in the same way always 27, unless the person chose a number less than 27; 5, he explained, was used as a divisor, from the five fingers of the hand.

To find the months, the quotient obtained by dividing the selected number, that is, 27 or less, by 5, should be multiplied by the number of months from the inquirer's last birthday. The result should be divided by the face of the set of dice nearest to the thrower, and the remainder plus the number of months from the last birthday, minus the quotient obtained by dividing, will give the odd months of the inquirer's life. The days are obtained by a similar process, but with less precision, says my informant, than the months and years.

The process of telling the name of a flower that is thought of, according to one of the methods laid down in the *Parisapaksi*, is more intricate than the preceding. I shall merely describe the operation of divining the first letter of the flower's name, when the fortune-teller is assisted by being told the number of letters in its name.

The two sets of dice are thrown three times. The sum of the first throw, say 24, is taken, and that of the faces of the four dice nearest the inquirer on the second throw, say 14, is subtracted from it ($24 - 14 = 10$). The sum of the third throw, say 25, is added to the last result ($10 + 25 = 35$), and that of the faces of the dice nearest the inquirer on the second throw, 14, again subtracted ($35 - 14 = 21$). The number of letters in the flower's name (in the experiment here referred to, the rose) must be subtracted from the last remainder ($21 - 4 = 17$), and the first figure of the first remainder, 1, added to the result ($17 + 1 = 18$). The number thus obtained will represent the numerical place in the alphabet, numbered from A downward, of the initial of the flower.

The dice last referred to are the kind that are now generally used throughout India for telling fortunes.

At the conclusion of the paper Mr. Nand, of Jodhpur, India, who was present at the meeting, gave a practical illustration of the methods of telling fortunes described in Mr. Culin's address.

In commenting upon the subject, President Brinton stated that among fortune-tellers here, their predictions seldom relate to life and death, although they frequently refer to money. Questions of love and marriage are here the principal ones.

President Brinton read a letter from Prof. J. C. Branner, State Geologist of Arkansas, in which was inclosed a copy of an inscription on the bluff at Millstone Creek, Ark. (Sec. 25, 13 N., 29 W.). This Dr. Brinton unhesitatingly pronounced a forgery, stating that the writing was of a not unfamiliar form, as he had seen it on many frauds from the West. These fraudulent inscriptions, he stated, usually contain characters that resemble those in the alphabets contained on one of the pages in the back part of Webster's Unabridged Dictionary, and this, he suggested, probably furnished an inspiration to the makers of such deceptions.

Mr. Culin exhibited a board for *dama*, drafts, and *taula* (our backgammon), with a pair of dice, from Damascus, which had recently been obtained by him for the collection of objects used in games in the Museum of the University of Pennsylvania. The board, which was said to be over 100 years old, was inlaid with silver wire, ivory, and mother of pearl.

APRIL 2D.

Mrs. Cornelius Stevenson, Honorary Curator of the Egyptian Department of the Museum of Archæology and Palæontology of the University of Pennsylvania, who had been invited to address the Society, read the following paper:

ON CERTAIN SYMBOLS USED IN THE DECORATION OF SOME POTSHERDS FROM DAPHNÆ AND NAUKRATIS,

NOW IN THE MUSEUM OF THE UNIVERSITY OF PENNSYLVANIA.

The painted potsherds to which I would call attention, belong to the collection recently sent to the Museum of the University of Pennsylvania by the "Egypt Exploration Fund," and form a part of the discoveries made by Mr. William M. Flinders-Petrie, on the ancient sites of Daphnæ and Naukratis in the Delta.

The geographical position of these sites, and the period of history to which they belong—*i.e.*, a period full of commercial activity, and of brisk intercourse between the Mediterranean peoples and the civilized nations of Western Asia and Northern Africa, who one and all contributed their share to the development of Greek thought, make these potsherds particularly valuable for the purpose of tracing the gradual evolution of certain artistic forms which have become familiar in decorative art. And the fact that those in charge of the excavations, keenly appreciating the requirements of modern science, spared no pains to establish the historical stratum and the exact surroundings of every fragment discovered by them, has added the greatest possible value to the "finds." Moreover, by means of the published reports of the explorers, we not only possess all the necessary data concerning the specimens obtained by us, but we are able to trace the companion sherds which have found their way into other museums, so that, although our own series may be incomplete, we often can, for the purpose of study, supply its deficiencies by means of the published plates.[1]

THE HUMAN-HEADED BIRD.

For instance, among the number of smaller pieces sent to the Museum of the University are two fragments of a vase of red-glaze incised painted ware (fig. 19), found at Tel-Defenneh—(N. E. Delta), which upon referring to plate xxxi, fig. 4, of Mr. Petrie's work upon that site, may be seen to represent the head and tail of the human-headed bird later known in Greek art as a Harpy (fig. 20). [The wings and middle portion of the body are missing in our specimen, although sufficient trace of the former remains to indicate that, in their form, they were similar to those in the published specimens, in which the head is wanting. Comparing the two, we have the complete bird.]

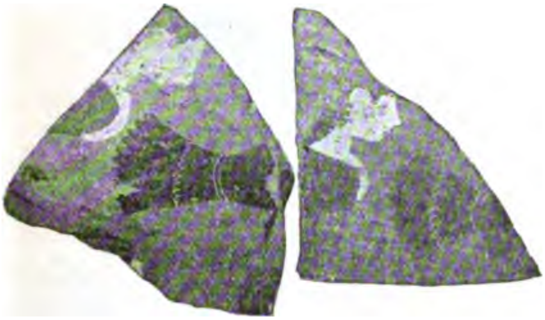


Fig. 19. Potsherd from Daphnæ. Mus. of the University of Pennsylvania.

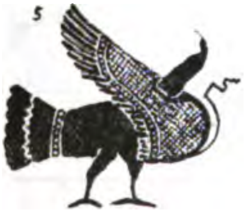


Fig. 20. Potsherd from Daphnæ, W. M. Flinders-Petrie, *Tanis* II, pl. xxxi, fig. 4.

It is worthy of remark that a variation of this form is found on a fine Œnochoë from Kamiros (Rhodes), in the British Museum. The attitude and the body and tail are very similar to those in our example, but the wings are spread out instead of being held up erect.[1]

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[1] See *Tanis*, Part II, *Nebesheh* (Am.) and *Defenneh* (Tapahnes) by Mr. W. M. Flinders-Petrie. Also, *Naukratis*, Parts I and II.

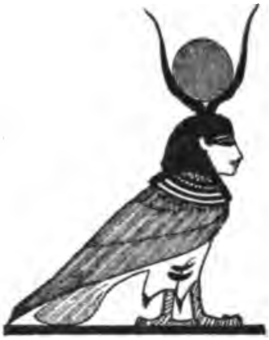

Fig. 21. Egyptian Soul-Bird.

The older and common Egyptian form of this fanciful creation is herewith given (fig. 21). Thus it was that the Egyptians portrayed the soul which they call "Baï." It is sometimes depicted with outstretched wings, fluttering over the mummy, holding in its hand the emblem of life—*i. e.*, the Cross—or presenting to it both the Cross

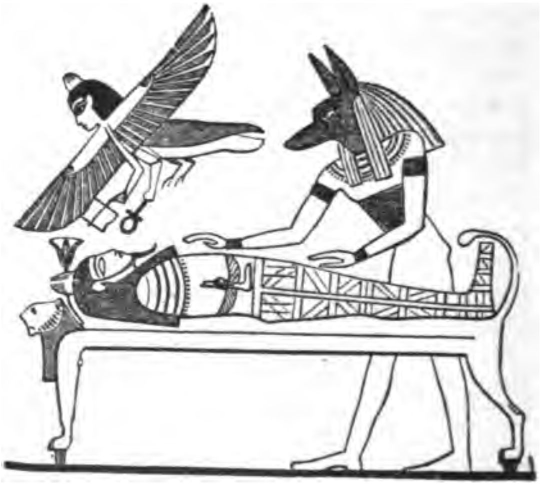

Fig. 22. From Sir G. Wilkinson's *Manners and Customs of the Ancient Egyptians*, III, p. 158.

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[1] A. S. Murray, *Handbook of Greek Archæology*, p. 62.

and the Sail, which was the hieroglyph for breath[1] (fig. 22). Another form shows it standing by the side of a coffin, with raised hands, in an attitude of invocation.[2] Another still (fig. 23), under the sycamore tree, receiving from the mother-goddess the waters of life.[3]

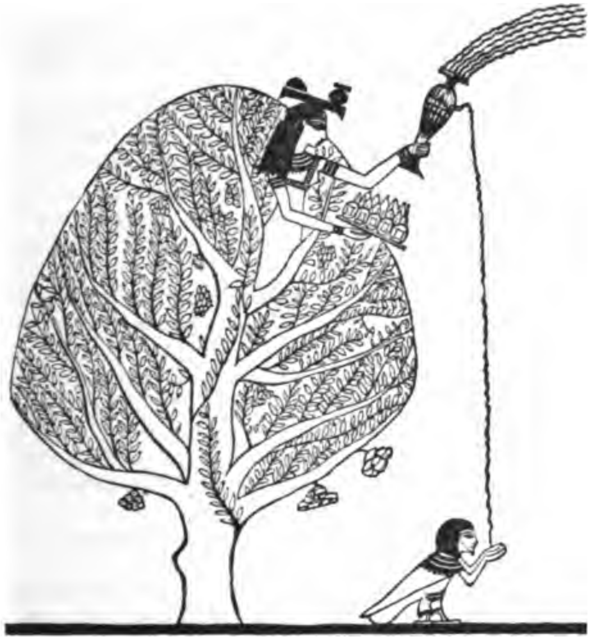

Fig. 23. From Sir G. Wilkinson's *Manners and Customs of the Ancient Egyptians*, III, p. 64.

Among people of primitive culture, the notion that birds are transformed disembodied spirits seems to be a common one. Night birds, such as bats and owls, who haunt caves and are found living where the remains of the dead have been deposited, are particularly so regarded.[4] Many examples might be furnished of such ideas being prevalent not only among modern races in a low stage of intellectual development,[5] but among the nations of antiquity.

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[1] Wilkinson's *Manners and Customs of the Ancient Egyptians*, Vol. III, p. 158. New Ed.

[2] *Gazette des Beaux Arts.* Reproduced by E. Soldi in *Les Arts Méconnus*, p. 488.

[3] *Wilkinson, loc. cit.*, III, pp. 64 and 119.

[4] H. Spencer, *Principles of Sociology*, 1865, p. 329.

[5] Among the indigenous races of America the notion that associates night birds with

The Rig Veda (I, 165, 4) directs the worshipper to curse death and the God of the dead, when the owl emits her dismal cry; and this

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death, and sees even in ordinary birds, spirits of the departed, is a very general one. The owl was regarded by the Aztecs, the Quichés, the Mayas, the Peruvians, the Araucanians, and the Algonquins as sacred to the Lord of Death, whose messenger it was. (D. G. Brinton's *Myths of the New World*, p. 106. Among the Quichés, not only were owls looked upon as departed spirits, but they were supposed to take part in the affairs of men. (*Ibid.*, p. 64.)

The Dakota children have a "Ghost-game" which betrays the light in which the owl is regarded among their people. One of them erects a hut outside the village, and at night comes hooting like an owl and scratching on the outside of the tent. (J. Owen Dorsey, *Am. Anthrop.*, October 1st, 1891, p. 330.)

The Aztecs thought that the spirits of all good people as a reward became embodied in birds, and the Powhatans believed that the souls of princes passed into birds. (D. G. Brinton's *loc. cit.*, p. 102.)

In Iroquois mythology a small bird (Saxonis fusca) is supposed to have come from a human pair changed by the Creator, who doomed them to inhabit caves, ruins, and such places. (J. N. B. Hewitt, *Am. Anthrop.*, January 1st, 1892, p. 36.) Moreover, when a man died they set off a bird who was supposed to carry off with it the spirit of the dead. (Schoolcraft, 113; Comp. E. B. Tylor, *Prim. Cult.*, II, 9.

In Tierra del Fuego the souls of the dead are supposed to enter the bodies of ducks, and after some English travelers had been out duck-shooting, the natives tried to placate the spirits by blowing. (A. Réville, *Religions des Peuples non civilisés*, II, p. 399.)

The Abipones also think that the soul flies off under the shape of a duck. (*Ibid.*, I, 386.)

The Hurons and the Mandans looked upon doves as spirits of the departed. (D. G. Brinton, *loc. cit.*, p. 107, quoting *Rela. de la Nelle. France, An.*, 1636, Chap. IX), and acc. to Coreal *Voy. aux Indes Occ.* II, p. 132, quoted also by D. G. Brinton, *loc. cit.*, p. 254.) The inhabitants of Popoyan would not kill doves because they believed them to be animated by the souls of the departed.

Similar ideas are found in other parts of the world. For instance, the Orang Koubous of Sumatra, believe that the departed spirit flies above the soul where the body rests (*Bulletin de la Soc. d'Anthrop.*, Jan., Feb., 1891, p. 32), and in the Philippines bats are treated with respect by the natives for similar reasons. (See H. Spencer, *Principles of Sociology*, 1885, p. 330.) The same author quoting M. Caussin de Perceval says that the Arabs believed that "when the soul left the body it flew away in the form of a bird which they called Hâma or Sada (a sort of owl), and did not cease flying around the tomb crying pitifully."

Mr. Codrington, *Journ. of the Anthrop. Inst.* X, 261, tells of a woman from the Banks Islands who, knowing a neighbor at the point of death, heard a fluttering in her house just as the cries outside showed her that the man had died. She caught the flying creature and ran with it to her neighbor's, crying that she had caught the "atai" (spirit, personality) and opened her hand over the corpse's mouth, of course with no result. Other similar beliefs exist among the Samoans. (See H. Spencer, *loc. cit.*, p. 796.)

To this day in the folk lore of France relating to the legends connected with the night-hunt, the Souls of the Dead are often alluded to as doves who, pursued by bird was brought into close relation by the Hindus with the God Yama who ruled the underworld. The crow was also closely connected by them with the shades of the departed, and when funereal offerings were given to the crows, souls were supposed to pass into a better world.[1]

In the Odyssey[2] the spirits of the dead are said to "twitter like bats and scream like frightened birds," and the Hebrew soothsayers, when consulting the shades of departed ancestors, are represented by Isaiah as chirping like birds.[3]

A survival of the idea may be detected in the widespread, unreasoning and superstitious dread inspired by bats, and even owls, among cultivated people of our own day. Indeed, I have known the feeling to be extended to the accidental visit of ordinary birds by some persons who look upon such an occurrence as an omen of death. And the numerous legends connected with vampires have a similar origin in the past.

In the Chaldæan story of Ishtar, she is represented as threatening that, unless she be admitted to the realm of the dead, she will let them out to devour the living.[4] But although the ancient Babylonians conceived the soul after death as "clad like birds in a garment of feath-

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Satan, only find rest under the protection of the Cross. (See *Les Acousmates et les Chasses fantastiques*, by E. Henry Carnoy, *Rev. de l' Histoire des Relig.*, IX, 375.)

In the *Chron. of the Beatified Anthony*, quoted by Gubernatis (*Zoological Mythol.*, II, 254), fetid black pools are described in *Regione puteolorum in Apulia*, whence the souls arise in the forms of monstrous birds, in the evening hours of the Sabbath, and wander till, in the morning, an enormous crow compels them to submerge themselves and to disappear.

In Hungary, as indeed in many other countries, the owl is the bird of death and its cry a bad omen. (Comp. Gubernatis *loc. cit.*, where many such superstitions are mentioned as existing among Aryan peoples.)

[1] Gubernatis, *Zoological Mythol.*, II, 254.

[2] *Odyssey*, xxiv, 5–10.

[3] *Isaiah* viii, 9. "And when they say unto you inquire of the spirits" (the word is based upon the meaning of ancestors) "and of the soothsayers" (literally: those who know) "who chirp and who murmur—should not a nation inquire of its God through the living, the dead?" I am indebted to Dr. Morris Jastrow for the above analysis of this interesting passage.

Among the Polynesians there is a widespread notion that ghosts have a chirping, whistling voice. In the Tonga Islands it was forbidden to whistle because it was tantamount to imitating the voice of the gods. (Albert Réville, *loc. cit.*, II, 96.)

[4] Sayce, *Hibbert Lectures*, page 146, says "under the shape of vampires." Ménant, *Recherches sur la glyptique orientale*, p. 177, says under the shape "of wolves." It is curious to find this passage giving rise to these two interpretations—when, as a matter of fact, the notion which inspired it has given birth to the two conceptions of

ers;"[1] or "Like birds clothed with wings,"[2] I am unaware of their having originally used this form to illustrate the notion in art.[3] It is in Egypt that we first find the soul-bird represented in a visible shape, and we may therefore consider the Nile Valley to be its birthplace as an artistic form.

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the "vampire" and the "Loup-garou" or were-wolf, both weird embodiments of the disincarnate human spirit, regarded as preying upon the living.

The Keres of death, who, in Greek mythology, "stretch men in the grave" (*Iliad*, viii, 70) and whom Hesiod shows us flying over the battle-field "gnashing their white teeth," terrible, insatiable, struggling for the fallen warriors, "thirsting for their black blood," who, when they he'd a wounded warrior, buried their talons into his flesh "and sent his soul into Hades—in the Chilly Tartarus"—seem as though they might be actors of the scene of violence threatened by the great Chaldean nature-goddess. "See Hesiod, *The Shield of Herakles*, 249." And the notion of the souls of the dead thirsting for blood appears in the Odyssey, when the blood of Ulysses' sacrifice draws the phantoms of the dead "like flies."

[1] "Descent of Ishtar into Hades" f. 10. Sayce, *The Relig. of the Ancient Babyl.*, *Hibbert Lect.*, 1887, 221.

[2] G. Smith, *Assyr. Disc.*, p. 203, Legend of Isdubar.

[3] The extraordinary scene from Tello now in the Louvre, where birds of prey are depicted bearing away the limbs of the dead on a battle-field—is obviously a scene of carnage symbolical of victory. (See Léon Heuzey, *Les origines orientales*, p. 40, etc. Comp. with M. de Sarzec, *Découvertes en Chaldée*, pl. i, 2–3.)

The nearest approach to the artistic form of the human-headed bird which I have been able to find among the antiquities of Mesopotamia is on a remarkable cylinder of lapis-lazuli in the museum of the Hague—published by M. Ménant—(*Recherches sur la Glyptique Orientale*, p. 97, fig. 56). Two fantastic winged-beings with human heads and scorpion-like tails, face each other on either side of an object resembling an altar. M. Ménant is no doubt right in suggesting that these weird creatures represent the Scorpion-keepers of the mysterious region beyond the seas—situated in one of the islands at the mouth of the Euphrates—who, according to the legend, guard the rising and setting of the sun. When, in the mythical story of Gilgames, the hero, seeking Hasisadra, journeys toward the land of Mas where dwells the sage, now raised by the gods to immortality, he meets the monsters and engages in a colloquy with them. The date of this cylinder is unknown. We may, therefore, have here an adaptation of the Egyptian soul-bird applied by the Mesopotamian artist to the mythical guardians of the land of immortal spirits; or, which is more likely, we may have a production of pure Mesopotamian symbolism. These *speaking* scorpions might well be represented with human heads, whilst their being endowed with wings as a proof of their supernal essence seems quite in keeping with what we know of the symbolism of the Assyrians and Babylonians. However this may be, the creatures are primarily scorpions and not birds.

The same mythical beings are represented upon a Persian cylinder, published by Ch. Lenormant, *Mélanges d'Arch.*, III, pp. 130, etc. There they are given lion's feet, in addition to a human head and wings—and they stand under the flying Sun-disk. V. Place, *Ninive et l'Assyrie*, 76, has also published a cylinder on which the same creatures are represented.

Among the Egyptians, the human-headed hawk,[1] in the symbolism of the historical period, belonged to the higher plane of thought which identified the soul of man with the Hawk of Horos—the Divine Spirit embodied in the sun—whose destiny it must share. Yet there is little doubt that notions more or less similar to those described above originally prevailed in Egypt. At all events, it is quite clear that, along with the belief in the soul's ultimate apotheosis, and in its diurnal journey in the solar bark, there co-existed among the people—even under the New Empire—a more homely belief[2] evidently based upon a more primitive conception of which it may be regarded as a survival, and according to which man's highest aspiration upon leaving this life, was to continue to lead in his tomb a pleasant material existence—his bird-embodied soul coming and going out at will into the day.[3]

If we remember that among people of primitive culture the spirit is identified with the breath, and the breath with the physical air—as is attested by the philology of the words used to express these ideas in many languages, ancient and modern—it becomes easy to conceive how the winged inhabitants of the aerial regions came to be looked upon as spirits by man, at a time when the stage of intellectual development he had reached made it difficult for him to deal with abstractions.

However all this may be, the human-headed bird, as an artistic

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Indeed, according to Ménant, *loc. cit.*, I, 97, they are frequent on Chaldean and Assyrian monuments.

[1] In early times the hieroglyph for soul, Baī, was not the human-headed hawk, but a stork-like bird. See first tomb in Mariette, *Mastabas de l'Ancien Empire*, Sokar Kha biu. See also Pyramid texts in *Recueil de Travaux*, etc., Vol. III, p. 188, l. 70; p. 202, l. 209, etc. According to Gubernatis, *Zoological Mythol.*, II, 261, there is in Germany a superstition that, when storks fly around a group of persons, one of the group is about to die. And all who have traveled in Germany know the share which these birds have in the bringing of souls into the world. The same author regards owls, crows, magpies, and storks as occupying, among the Aryans, the same mythological position with regard to the dead.

[2] Comp. Maspero, *Etudes Egyptiennes*, II, p. 277.

[3] On many funeral stelæ of the XVIIIth and XIXth dynasties there occurs a formula in which the dead expresses a wish that: "I may take a walk by the edge of my basin, each day, without ceasing; that my soul may perch upon the branches of the funeral garden that I have made for myself, that I may refresh myself beneath my sycamores." Maspero, *Recueil de Travaux Relatifs à la Philologie Eg. et Ass.*, II, p. 105. 1880.

Comp. Stela C. 55 Louvre under King Aī—XVIIIth d. quoted in Maspero *Etudes Egyptiennes*, I, p. 175.

device, passed from Egypt to the Mediterranean peoples, who made use of it to illustrate many myths and legends, particularly those connected with the harpies.

These mythical beings—"daughters of the sea"[1]—in their origin personified, as did the Maruts of the Vedas, the storm-winds, and were evidently not the God-sent scourges which they later became, when the primeval animism of the Greeks developed into an ethical religion. It is likely that, as is the case in most primitive storm-myths, they were originally conceived as birds of prey.[2]

At first sea-born storm-winds, then messengers of Zeus, they extended comfort and protection to his favorites,[3] and executed his vengeance upon those whom he had doomed.[4] In this latter *rôle* they harassed their victims, or carried them off alive to the world's end, toward some mysterious place on the shores of the Northern Ocean.[5] It seems to be only later still that they are represented bearing away the souls of the dead; and it is probable that in the Harpy "Psychopompe," such as we see it depicted on the famous Lykian monument, known as the tomb of the Harpies,[6] we have an instance of the process so well explained by Mr. Clermont-Ganneau in his *Mythologie Iconologique*, and an evidence of the influence exercised upon the Aryan idea by the

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[1] Hesiod "*Theognis*," 132: The earth bare Pontos, 237: Pontos and the earth bare Thaumas (*i. e.*, Wonder), 265–7: Thaumas and Electra (*i. e.*, Lustre), daughter of Oceanus, produce Iris (*i. e.*, the Rainbow), and "the fair-tressed Harpies (the Storms), Aëllo and Ocypete, who, I ween, accompany the wind-blasts of birds with swift wings, for they are wont to fly high above the earth." In *Virgil*, Æne. iii, 245, the Harpies are numerous, and only Celaeno is mentioned by name.

[2] The Maruts are spoken of in the Vedas as warriors, as bulls, as horses, and also as birds. See, for instance, *Rig-Veda*, i, 87, 2. Hygin, Fab., xiv, says: "The three birds Harpies, Alope, Acholoe, and Ocypete, are daughters of Thaumas and Ozomene." See J. H. Cerquand, *Revue Archéol.*, 1860–1861.

[3] *Iliad*, xix, 415, 430. Zeus, wishing to soothe and comfort Achilles, calls Pallas: "As thus he spake, he sent the goddess forth, eager to do her errand. Plunging down in form a shrill-voiced Harpy, with broad wings, she cleft the air"—and feeds and strengthens the hero,

[4] See Sophocles, *Phin.* Compare Apollonius, *Argonaut*, ii, 180, etc.: "Across the clouds, suddenly appearing, the Harpies, with their claws, stole incessantly from the mouth and hands of Phineus. Often nothing remained, sometimes a little was left, that he might live in sorrow. Moreover, they cast upon those remains so detestable an odor that no one could have touched them with his lips."

[5] Comp. *Odyssey*, xx, 62–65, etc.; Euripides, Hipp., 732; Strabo, vii, 302.

[6] Bas-relief of Xanthos, Brit. Mus. See Collignon, *Mytho. figurée de la Grèce*, p. 287. A terra-cotta bird, found at Dali, and now also in the Louvre, is represented in the act of bearing away a human figure in its talons. Perrot and Chipiez, *Hre. de l'Art dans l'Antiq.*, II, 591.

Egyptian form borrowed to represent it. In other words, it is the result of the grafting of the soul-bird symbol upon the Aryan myth.

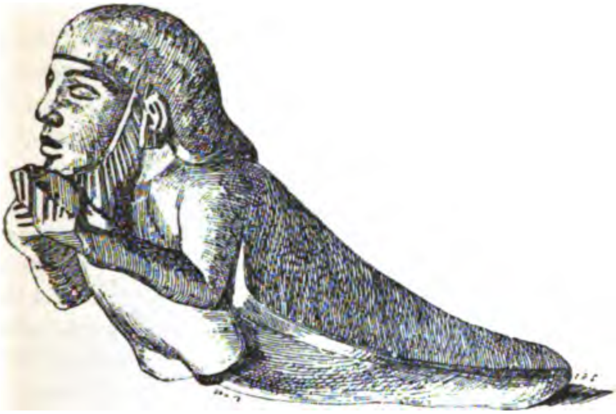

Fig. 24. Siren from Cyprus. Messrs. Perrot and Chipiez, *Hist. de l'Art*, II, p. 591.

A singular form of this imaginary creature, showing the adaptation of the artistic device, with a perversion of the idea which it originally was intended to embody, was found in the island of Cyprus, and is now in the Louvre (fig. 24). It is a human-headed bird, carved in limestone, and depicted with hands, holding up pan-pipes to its mouth. It is therefore, as already pointed out by Messrs. Perrot and Chipiez,[1] a hybrid standing between the Harpy and the Siren, and may

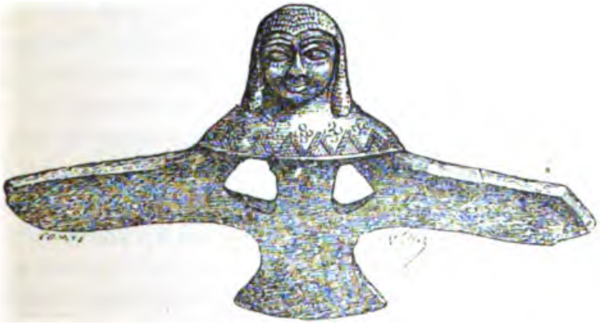

Fig. 25. Handle of bronze. Van Armenia, *Hist. de l'Art, etc.*, II, 734.

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[1] *Ibid.* For forms of Greek Harpies varying from the simple, human-headed bird to the human form with bird's legs and wings, see plate in the already-quoted article by Cerquand, *Rev. Arch.*, 1860, p. 367; see also Collignon, *loc. cit.*, 286, etc. For the introduction of the soul-bird and other Egyptian funeral practices among the Greeks, comp. Léon Heuzey, *Comptes Rendus de l'Acad. des Insc.*, 1882, p. 388, etc.

be regarded as illustrating one of the phases or aspects of these varying conceptions.

Among the antiquities of Van, in Armenia, are some bronze plaques in which the swinging handles of vessels were fastened. Some of these are in the shape of human-headed birds, and the one which is here given[1] may be said to have an Egyptianized expression. In this case we have reached the stage where the mythical meaning of the object represented has been entirely lost,—*i. e.*, only the decorative "motif" remains.

It is now recognized that the Mediterranean peoples at the dawn of their civilization copied many artistic forms brought to them by commerce with the outside world—often without understanding the religious ideas that had led to their creation as symbols; that is to say, as the artistic expression of that, which to people of another race, was a deep-felt truth. Such singular composite forms would readily strike the imagination of the Greek artist and of the Greek poet, who, in his effort to understand their meaning, often built around them innumerable legends and myths, a process in the course of which the original idea often became obscured, if not altogether lost.[2]

This is not confined to minor symbolical forms; it extends to the Pantheon and to the mythology; and the much quoted Har-pe-Chruti, whose childhood, represented in the conventional Egyptian way by the familiar gesture of carrying the fore-finger to the mouth, was misunderstood by the Greeks and was turned by them into Harpocrates, the God of silence; or the myth of Bellerophon and the Chimera,[3] if perhaps the most striking and the best known, are by no means the only instances of a divine personage having more or less lost his identity before his introduction into the Greek Pantheon. There are other mythological forms which might be traced, as loans, to Egypt; although one should tread cautiously upon such doubtful ground.

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[1] Collections of St. Petersburg, Œuvres de Longpérier. Another is in the Coll. de Voguē, I, 276—*Hre. de l'Art, etc.* Perrot et Chipiez, II, p. 734. There are others in Paris and in London and similar ones have been recovered in Palestine and at Olympia, Greece. See *Arch. Zeitung*, 1879, p. 181. Mr. Holleaux, during his excavations in Greece, 1885, discovered a large brazen basin, the handle plaques of which were formed with two human-headed birds, to whom the artist had also given human arms. See *Bull. de Correspondance Hellénique*, 1888, quoted in *Bull. Arch. de la Relig. grecque, Rev. des Relig.*, XX, 1, 89, 290.

[2] Comp. Clermont-Ganneau, *L'Imagerie Phénicienne et la Mythologie Iconologique*, 1880.

[3] See P. Decharme, *Mythologie de la Grèce Antique*, 1886, fig. 161. Comp. with Clermont-Ganneau, *Horus et St. George; Revue Arch.*, 1873, fig. 13.

THE SACRED TREE.

Another very interesting fragment in the collection of the University of Pennsylvania, also from Tel-Defenneh (*i. e.*, seventh century B. C. fig. 26), is the broken neck of an amphora-shaped vase of red incised pottery, decorated with a most significant design, of which many adaptations or corruptions are, like the ancient soul-bird just referred to, in common use to-day. The variations which this one artistic theme furnished the Mediterranean peoples are well-nigh infinite; and it is, therefore, scarcely surprising to find it constantly applied by our modern artists under different names:

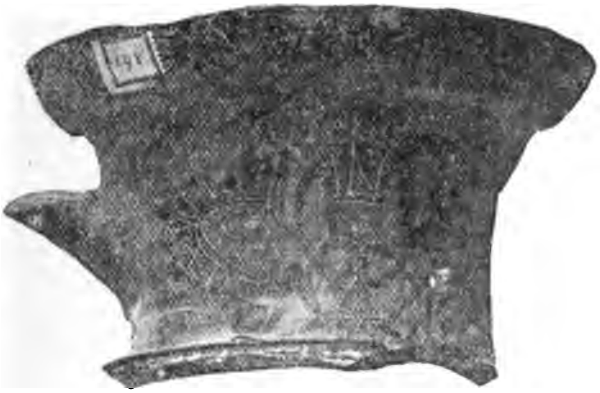

Fig. 26. Potsherd from Daphnæ, in the Museum of the University of Pennsylvania.

The hylix-pattern—as Mr. Birch calls it,[1] the honeysuckle design—as it is termed in our schools of decorative art, the anthemion—its classical name; or, according to the French name in which, strangely enough, the original intention has been preserved through all these centuries: the "Palmette."

Whatever may have been the history of the symbolism represented in this type of the sacred tree—which is evidently a composite one—our potsherd teaches us that, in this highly conventional form, it exercised a powerful influence upon the decorative art of the Mediterranean peoples, and supplied them with an endless variety of designs.

From at least the ninth century B. C. it was a familiar object on the walls of the palaces of Nineveh[2] (fig. 27). In early times the sacred

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[1] *Ancient Pottery*, pp. 303-5.

[2] Layard's *Monum.*, first series, pl. 7. Only the top of the tree is here given.

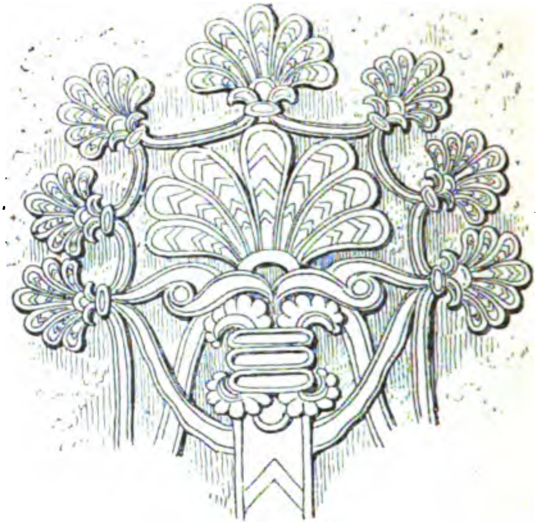

Fig. 27. Top of sacred tree. From Layard's *Monuments of Nineveh*, 1st series, pl. vii

palm-tree seems to have been generally drawn in its natural shape—or, at all events, in a more simple emblematic form.[1] It is obvious that foreign artisans could not have been inspired by the wall-decorations of the temples, palaces, or tombs of distant lands, and that such designs as served them as models must have reached them by means of portable manufactures. There is little doubt that the inordinate use which the Assyrians made of the "palmette" in the ninth, eighth, and seventh centuries B. C.—*i. e.*, during the period of their most stirring war-like and commercial activity in a westerly direction—accounts for its great popularity in Asia Minor, and among the inhabitants of the basin of the Mediterranean Sea at about this time.

If we make due allowance for the difference in the execution of the two pieces above given—one a carefully-sculptured bas-relief, in carving which the Assyrian artist was treating the conventional symbol of his own religion, the other a rough sketch, drawn upon the neck of an ordinary pottery vessel by a foreign artisan, copying what, to him, seemed simply a decorative device—we shall see that the latter has made what may be considered a very fair attempt at adapting the well-known symbol to his artistic purposes.

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[1] See Ménant, *Recherch. sur la Glyptiq. Orientale*, p. 140, fig. 86. Cylinder of Dungi, son of Urkham; and another, p. 142, fig. 87; another, p. 189, fig. 120, although a well-drawn palm-tree, is set up on a sort of altar, and approaches an emblematic form. Many examples might be given of very ancient forms, more or less conventionalized.

This comes out much more distinctly in the black and white copy of the design, taken from Mr. Petrie's work (fig. 28) than it does in the photograph, where the red coloring of part of the pattern causes the outline to be indistinct.

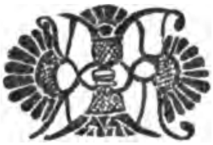

Fig. 28. Potsherd from Daphnæ. From Mr. Flinders-Petrie, *Tanis*, II, pl. xxxi, fig. 4.

The same design occurs, much more neatly executed, upon a Greek amphora signed by Nicosthenes, published by Mr. Klein,[1] and the approximate date of which is circa 500, B. C.

It is worthy of note that a sherd also signed by this artist was recovered at Naukratis.[2] This fact, viewed in connection with the absence[3] at Daphnæ and Naukratis, of the types of decorated pottery which elsewhere preceded the introduction of the "Oriental" style,[4] gives us a hint as to the possible influence of the Delta school of art upon the work of Nicosthenes. Indeed, doubt has been expressed as to his having been an Athenian.[5]

Mr. E. B. Tylor, in an interesting article, recently published,[6] has gone far toward proving that the large winged-figures which have become so familiar to us from their frequent occurrence on the bas-reliefs of the Babylonian and Assyrian palaces, where they are depicted standing in front of the sacred tree, touching it with a cone-like object which they hold in their hand—represent the divine act of fertilizing the tree over which they are supposed to shake the pollen of the full-blown male blossom (fig. 29). To the people of Mesopotamia

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[1] *Vasen mit Meistersign.*, p. 30.

[2] *Naukratis*, Part I, p. 53.

[3] *Naukratis*, Part I, p. 49. Chapter on Pottery by Mr. Cecil Smith.

[4] Although certain survivals of the "Geometric" type of decoration had remained to show that the time was not very far off when it was in vogue. Comp. Chapter on the *Pottery from the Temenos of Aphrodite*, by Mr. E. A. Gardner. *Naukratis*, Part II, p. 50.

[5] Comp. Cecil Smith in *Naukratis*, Part I, p. 52. See an excellent article by Mr. H. A. Tubbs in Smith's *Dict. of Greek and Roman Antiq.*, p. 929.

[6] *Proceedings of the Soc. of Biblical Arch.*, 1890.

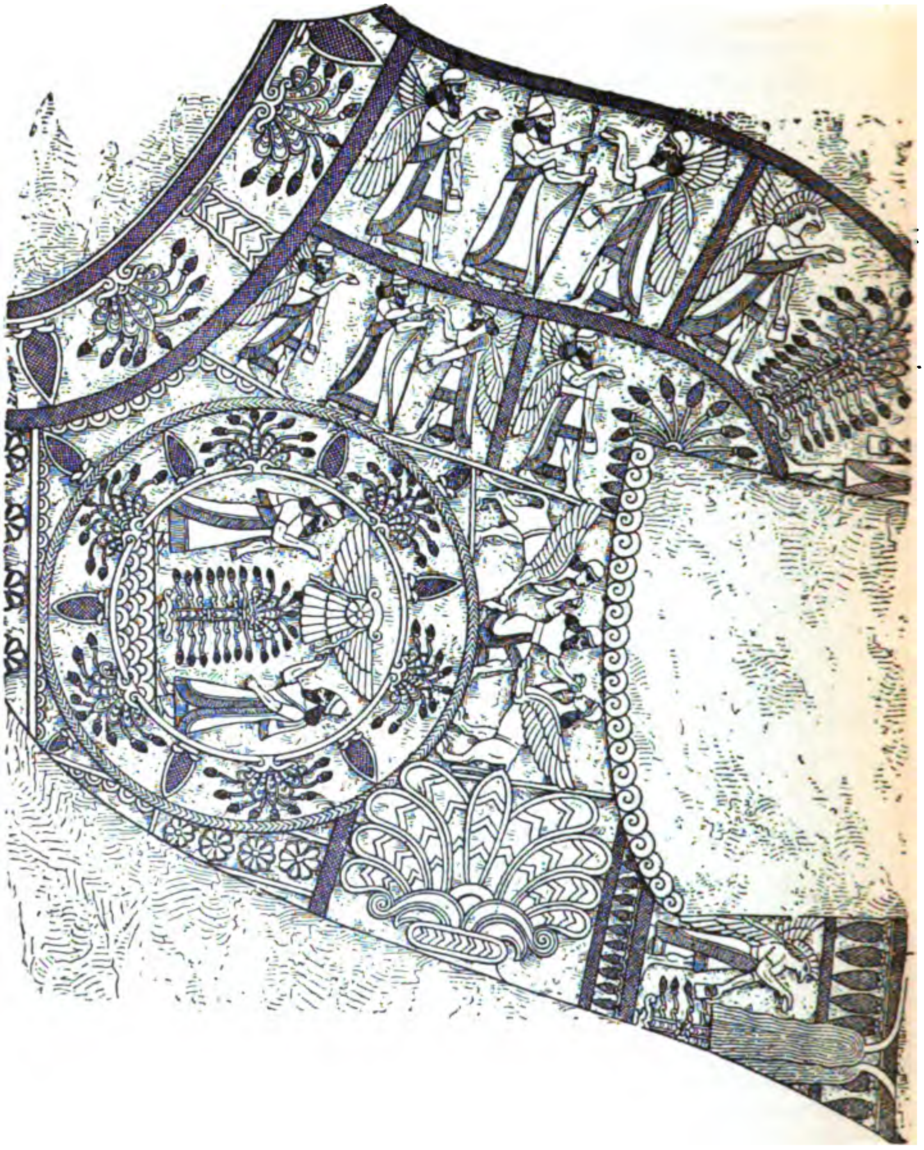

Fig. 29. Robe. From Layard's *Monuments of Nineveh.*

the fruit of the palm was the "staff of life." The wine made from it "made glad the heart of man;"[1] and the failure of the annual crop meant famine in the land. Therefore, according to Mr. Tylor, the gods, by the fulfilment of this act were thought to insure the life and prosperity of their worshippers.

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[1] Sayce, *Hibbert Lectures*, 1887, p. 242.

This view receives strong confirmation from the observation of the palm trees, figured on the monuments as natural objects in the landscape. These present so close a resemblance to the *palmette* that the latter can scarcely be called a conventionalized form. See Layard's *Monuments*, etc., plates 58, 72, 41, 43, 49, etc. This is particularly the case when, as on a cylinder published by J. Ménant, (*loc. cit.*, p. 191, fig. 121,) the palm tree, although represented as a natural object, is drawn with a short trunk. In the Assyrian landscapes the palm trees have as many as 11 or 13 palms, yet some are represented with as few as 6—and the usual number is 7 or 9—*i. e.*, numbers commonly exhibited by the conventional design.

Although there is every likelihood that Mr. Tylor has come very close to solving the problem, it seems likely that we have in the conventional representation of the tree, so common during the last centuries of the great Assyrian Empire, a syncretism of the various sacred trees worshipped throughout the land.[1]

That there were several of these seems certain, and a close inspection of the artistic renderings of the tree of life on the ancient cylinders reveals the fact that, although the palm is by far the most frequently dealt with, others are depicted which apparently should not be confused with it. For instance, a cylinder found at Tello by Mr. de Sarzec,[2] seems to represent a simple Ashêrah, topped by branches that somewhat resemble stag's horns, and decorated with long streamers.

Others represent trees, at the end of each naked branch of which is a cone.[3] Perhaps we have in these the cedar, the sacred tree of

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[1] Mr. Sayce suggests (*loc. cit.*, 242,) that the palm and the cedar—the sacred tree of Eridu—may have become merged into one by the later Babylonians, or that the palm tree may have succeeded the older cedar tree. This latter hypothesis (p. 240) does not seem to me a likely one, as the palm appears on very ancient cylinders. The first seems far more probable. Mr. Sayce also recalls the fact that among the Western Semites there was a tradition that mentioned two trees: the tree of knowledge and the tree of life. See Genesis iii, 21–24. "And the Lord said: behold the man is become like one of us, to know good and evil: and now lest he put forth his hand and take also of the tree of life, and eat and live forever." . . . "So He drove out the man; and He placed at the east of the garden of Eden—cherubims and a flaming sword, which turned every way to keep the way of the tree of life."

[2] Léon Heuzey, *La masse d'Armes*, Paris, 1887, quoted by Mr. Goblet d'Alviella, *La Migration des Symboles*, Paris, 1891, p. 171.

[3] J. Ménant, *Recherches sur la Glyptique Orient.*, p. 65, fig. 5, gives a cylinder on

Eridu, which at all times played a conspicuous part in the magic of the Babylonians.[1] Mr. Sayce[2] also quotes a passage in which the "divine lady of Edin" is mentioned as the "Goddess of the tree of life" in the Akkadian of N. Babylonia, and as the "Goddess of the vine" in the Sumerian of S. Babylonia. So that, if this is correct, the sacred tree would appear to have also been identified with the vine.

Moreover, according to Sir George Birdwood,[3] certain forms of the climbing plant wound around the sacred tree on Assyrian bas-reliefs closely approach the "Asclepias acida"—*i. e.*, the sacred plant or tree of life, from which Hindus and Iranians both derived their immortal Soma or Haoma.

On the other hand, the cone is sometimes held up—not only over a tree—but to the face of human figures or objects which are not palm-trees—or the conventional gesture is made before the tree without the cone being held in the hand of the figure[4] (fig. 29 furnishes examples of this). And Mr. Goblet d'Alviella has very justly observed[5] that the cone is used in very much the same manner as is the Ankh—or "life"-sign by the Egyptian gods—and obviously with a life-imparting intention.

The evidence seems therefore to point to the fact that our symbol, in its later conventional shape, was a complex one. That originally it was closely associated with the great nature-goddess, and that the scenes in which it so conspicuously appears were symbolical of the universal generative and reproductive powers of deified nature, seems to

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which palms are represented, and on the same cylinder a seated god holds in his hand a stem with branches, at the end of each of which is a cone. Such trees are represented as natural objects in the landscape in historical bas-reliefs (See Layard's *Monuments*, p. 33, p. 39, fig. 1–46, fig. 1), showing that they were intentionally thus depicted.

[1] Mr. F. Lenormant (*Les Origines de l'Hist.*, I, p. 84, gives the following text from *Cuneif. Insc.* W. A., IV, pl. 162): "Take a vase, put in it some water, put in it some white cedar wood, place in it the charm that comes from Eridu, and thus complete the virtue of the enchanted waters." Another text given by the same author says: "Take the fruit of the cedar, and present it to the face of the patient; the cedar is the tree that gives the pure magic and repels the unfriendly demons—ever ready to ensnare"—*loc. cit.*, 83–84. Comp. Sayce, *Hibbert Lectures*, 1887, p. 242. It was upon the heart at the core of the cedar tree that the name of Ea was inscribed, and it was associated with the magical arts and the secrets of heaven. Only the initiated could taste its fruit.

[2] *Loc. cit.*, p. 260. Note.

[3] *Industrial Arts of India*, Part II, p. 430.

[4] (*Antiq. B. M.* I Part III, pp. 362, 363, 364, 369, etc.)

[5] *La Migration des Symboles*, p. 180. Comp. above, p. 86, pl. 29.

be implied in the words of an ancient hymn of Eridu, in which it is described:[1] "In Eridu (a stalk) grew overshadowing; in a holy place did it become green;

"Its root was of white crystal which stretched toward the deep; (before) Ea was its course in Eridu, teeming with fertility;

"Its seat was the [central] place of the earth; its foliage (?) was the couch of Zikum [the primeval] mother,

"Into the heart of its holy house which spread its shade like a forest hath no man entered.

"(There is the home) of the mighty mother who passes across the sky.

"[In] the midst of it was Tammuz."[2]

Mr. d'Alviella suggests that this hymn may throw light upon the meaning of the group so often formed by the tree and the winged figures under the sun-disk, from which worshippers seem to draw down the life-giving rays of the sun upon the symbol, the whole scene being emblematic of the universal divine fecundity. It may be worthy of note in connection with this, that Dr. Richter has found a votive-offering of a sacred-tree in the temenos of Aphrodite at Chytroi, Cyprus. (See *Ancient Places of Worship in Kypros*, p. 48, pl. xvii.)

That even as a common-place decorative design, the sacred palm retained its meaning for the Assyrian artist, is hinted at in the ornamental detail of the gorgeous robe worn by Assur-nazir-pal on a bas-relief of the palace (fig. 30) of Nimrud.[3] On this, the workman has detached the palm in its most conventional shape, to form the centre of a group in which two goats or two winged bulls are alternately represented bending the knee before the sacred object. We, therefore, have here the transitional stage of the emblem—adapted and used for ordinary purposes, just as the cross often is with us—and which, in its purely decorative character, was carried by commerce over the entire region to which it had direct or indirect access.

The rosette, which, in Mesopotamian art, was conventionally used as a symbol of the sun, had probably a similar history; and its emblematic meaning in Mesopotamia, as well as the common use which its inhabitants made of it for purposes of decoration, justify its being considered a typical Mesopotamian symbol.

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[1] *Hibbert Lectures*, 1, '87, Sayce, p. 238. Comp. F. Lenormant *Orig. de l' Hist.*, II, p. 104.

[2] The Sun-God regarded as either the son or the husband of the Nature-Goddess.

[3] Layard. *Monuments*, etc., I series, p. 43.

Whatever may have been the genesis of similar designs in other regions[1]—whether they may be traced to floral or to geometrical forms—there is no room for doubting that its origin, on the banks of the Euphrates, must be traced to the eight-rayed star which, from the very earliest times to which we have access in Chaldea, was the ideogram

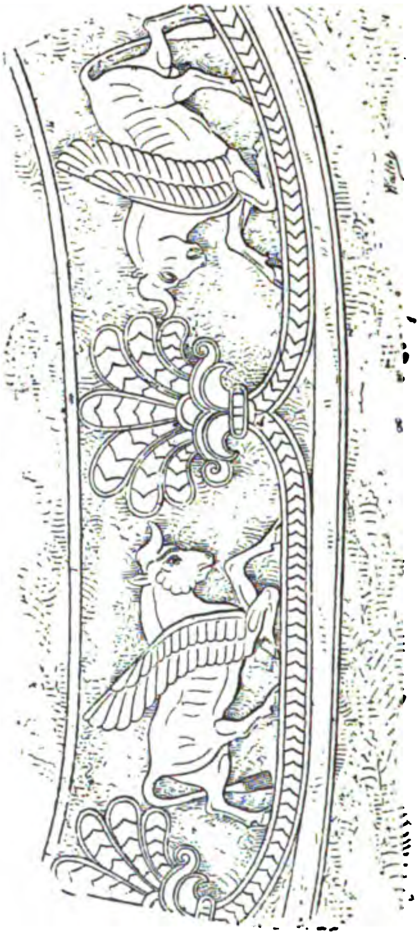

Fig. 30. Design from Robe. Layard's *Monuments of Nineveh*, I series, p. 43.

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[1] Mr. Murray, *Handbook of Arch.*, p. 77, has very properly pointed out that the rosette designs could be readily arrived at independently, without any conscious borrowing on the part of the artist.

for "god." Even as early as the time when the Tello monuments were erected, the star-symbol occurs in the conventional form of a star-rosette enclosed in a disk.[1] Later, a common form of representation for the sun is a four-ray star between the rays of which flame-like streaks are depicted.[2] And although the variety of form presented by the symbol in the course of time is almost endless, and it tends to lose its identity in the floral form; the numerous star-types survived to indicate its evolution from the hieroglyph for "god."[3]

We have at the Museum of the University of Pennsylvania a limestone bas-relief of the time of Khu-en-aten,[4] when Mesopotamian influence was, as shown by the discoveries at Tel-el-Amarna, very strong in Egypt, which represents a priest worshipping the sun-disk: This is simply depicted in the form of a floral rosette from which rays depend. Although it occurs early in Egypt, the rosette was never used there to represent the sun, and it only becomes common as a decorative design from the beginning of the New Empire. Then, however, it is vulgarized and frequently met with. For instance, there are, also in the collection of the University, some tiles from a palace of Rameses III at Tel-el-Yahudiyeh,[5] the design of which is identical with that to be seen on some tiles from Nineveh, now in the Louvre, and on which the wheel pattern likewise alternates with the floral rosette.

Mr. Goodyear[7] has offered a very probable suggestion as to the origin of the Egyptian rosette: He proposes to see in the dried-up ovary stigma of the lotus after seeding, the model from which the Egyptian artists derived their floral design. There is no doubt that the natural object, as given by Mr. Goodyear, bears a striking resemblance to the type which I have distinguished by the term of "floral," which makes its appearance on the banks of the Euphrates toward the close of the second millennium B. C.

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[1] Mr. de Sarzec, *Découvertes en Chaldée*, pl. 46, No. 7.

[2] Stèle of Nabu habal idin. Brit. Mus. disc. by Mr. Rassam. See Ménant, *loc. cit.*, 246. Here the simple eight-rayed star is the special symbol of Ishtar.

[3] See, for instance, Layard *Monum.*, pl. 42, where the star and floral varieties are each represented on the bracelets of two great winged figures of the palace of Nimrud. Plate 13 furnishes us with every possible variety: from the true solar eight-rayed star type to the later floral designs.

[4] Sent by Mr. W. M. Flinders-Petrie and found by him at Gurob.

[5] Sent by the "Egypt. Exp. Fund" in 1890.

[6] See Perrot and Chipiez, *Hre, de l'Art*, etc., II, p.

[7] *Am. Jour. of Arch.*, 1888, p. 290, fig. 14. "The Egyptian origin of the Ionic Capital and the Greek Anthemion."

Since the above was written, Mr. Goodyear in his work, the *Grammar of the Lotus*, 1892, has stated that Mr. Newberry also coincides in this opinion.

In connection with this suggestion, it is interesting to find that the Rosette-Sun-disk on the monument of Khu-en-aten, to which I have alluded above, is precisely of the pronounced "stigma" type. It would thus seem as though, at the time when Mesopotamian influence was strong enough to overcome the hieratic traditions of the native Egyptian artists, to such an extent as to lead them to represent the sun-disk after the fashion of the Asiatics, the Egyptian Rosette, brought into prominence by the novel use to which it had been adapted, had reacted upon the form used in Mesopotamia where it found its way and became popular.

This was the time (fifteenth century B. C.) when, as is shown by the recent discoveries at Tel-el-Amarna, Egypt was most subject to foreign influences;[1] and when the Babylonian scribes attached to the Court conducted a wide correspondence in the neo-Babylonian character with allied and tributary rulers of distant Semitic states. It is therefore likely that it is also at this time that many Egyptian artistic forms were grafted upon the symbolism of Asia; a process which gave rise to the mixed style of decoration so characteristic of the art of the Assyrian empire; and which, in the days of its supremacy and with the development of Phœnician commerce, spread over the Western world. At all events, the cuneiform tablets found at Tel-el-Amarna reveal a constant and direct interchange of industrial and natural products between Egypt and Mesopotamia; trees, brazen vases, bulls, etc., were, at this time, sent by the Asiatic kings in exchange for gold, stone-tables, Egyptian wares, and even skilled servants.[2]

A careful comparison of the remains of the Valley of the Euphrates with those of the Valley of the Nile cannot fail to bring with it the conviction that the two civilizations which they represent developed independently. If we make the proper allowance for such facts as are sufficiently explained by certain aspirations common to the human race, for the expression of which primitive arts and industries offer necessarily restricted means; and by a general likeness in the external circumstances of life that engenders common needs, born of common physical conditions, we shall find differences more fundamental in the manner in which the men of each region worked out the problems set before them, than the analogies that are apt, at first sight, to strike a superficial observer.

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[1] See Mr. Petrie's letter in the London *Academy*, April 9th, 1892.

[2] *Proc. of the Soc. Biblical Arch.*, 1888–9, June 5th, p. 588, etc. Mr. Budge gives the contents of letters from Burra-buryas, King of Babylon, and from Alashya, king of Mitanni, etc., in which such transactions are mentioned.

Contact, of course, there was—and a mutual exchange of thought and of industrial commodities took place, probably at a much earlier period even than that which we have been considering. But the loans that resulted from such intercourse[1] are beginning to be easier to detect; and with the progress of science, as we are permitted to penetrate more deeply into the inner thoughts that inspired these men, and which they embodied in their art, we may more readily distinguish that which belongs to the spirit of each race, from that which contact with others grafted upon the original stock of primeval ideas.

But to return to our potsherd. This fragment from Tel-Defenneh, dating from the seventh century B. C.—*i. e.*, towards the close of a period of immense Babylonian and Assyrian activity—enables us to trace the filiation of a long series of ancient and modern designs, to the sacred tree. It very nearly approaches the well-known conventional form of the Assyrian symbol, yet contains all the elements which, in time, were transformed for the common purposes of decoration;[2] and we are reminded that we are on Egyptian soil by the lotus-like form assumed by the portion of the design which, in the Assyrian symbol,

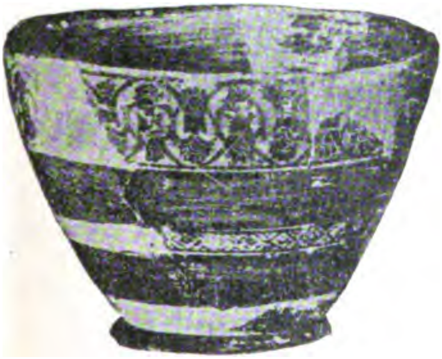

Fig. 31. *Naukratis*, Part II, pl. vii, fig. 4.

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[1] Mr. Léon Heuzey, *Les Origines Orientales de l'Art*, Vol. I, pp. 6 and 25, admits a distant Egyptian influence upon the art of Tello, but regards it as independently developed, and believes that in many particulars it betrays a spirit opposed to Egyptian methods.

[2] Comp. with the remarkable Cypriote form of the sacred tree, highly conventionalized and much altered, published by Dr. Max Ohnefalsch Richter (*Journal of Hellenic Studies*, Vol. V, p. 105.)

is a horn-like scroll. This lotus-form soon defines itself on other designs, and eventually becomes the favorite type of decoration used by the artist-potters of Daphnæ and Naukratis[1]—the same elements being used to produce different effects (figs. 31 and 32).

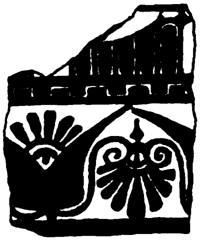

Fig. 32. *Naukratis*, Part I, pl. vii, fig. 15.

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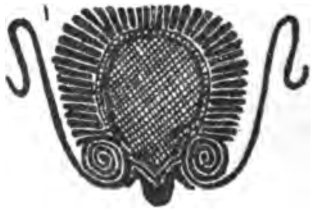

Fig. 33. *Defenneh*, xxxi, fig. 1.

On the neck of a similar amphora, reproduced by Mr. Flinders-Petrie[2] (fig. 33), the scroll supporting the palm, instead of stretching upward, as in our sherd, is tightly coiled beneath it. The greater or less loosening of these coils will in turn furnish the Greek artist with the many graceful running varieties of the pattern which are still in use to-day in our art-schools, and which have not been improved upon.

In comparing the decorative motives used by the artists of Thera, Melos, Rhodes, Cyprus, etc., and the Delta, it is very interesting to note how the same artistic elements, brought to them by outside influences, were appropriated and turned to account by each local school of art, which impressed upon them its own original stamp.

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[1] *Naukratis*, E. A. Gardner, Part II; *Ibid.*, pl. vii, fig. 4; pl. xi, fig. 2; plate viii, fig. 5. Also, *Defenneh*, see *Tanis*, Vol. II, pls. 7 and 27, fig. 3, and pl. 18, fig. 4.

[2] *Tanis*, Part II (*Defenneh*), pl. xxxi, fig. 1. Compare with the vases found in the island of Melos (Conze Melische Thongefässe), and with those found at Thera and Kamiros.

The fact that several of the ceramic forms found at Tel-Defenneh by Mr. Petrie are considered by him as intermediate between the well-known Egyptian shapes and the true Greek types found elsewhere, and that these intermediate forms are often decorated with the most archaic designs, derives its principal interest from the history and the geographical position of the site on which they were found.

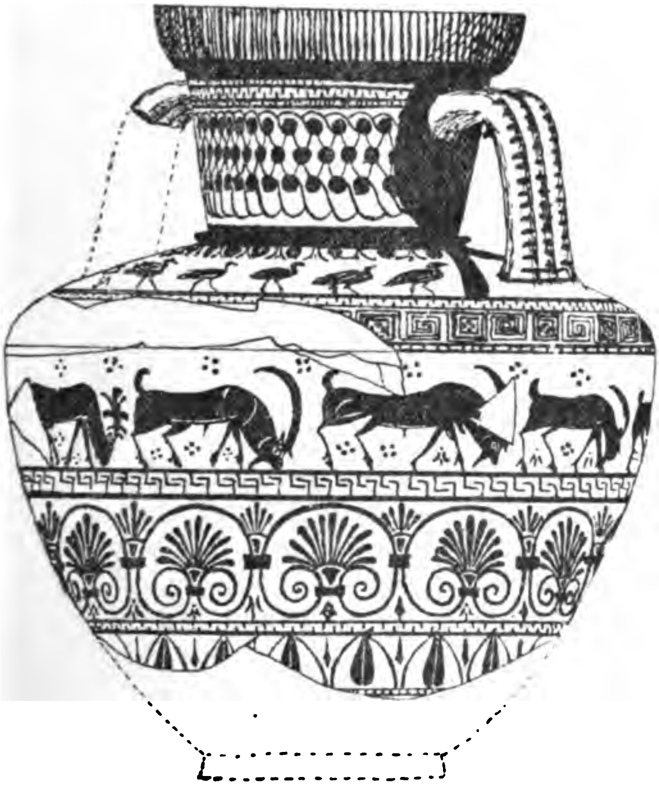

Fig. 34. Daphnæ. *Tanis*, Part II, pl. xvii, fig. 3.

Tel-Defenneh,[1] the Daphnæ of the Greeks, was situated on the edge of the desert and was a stronghold protecting the road to Syria. According to Herodotus[2] it is at Daphnæ that Sesostris—*i. e.*, Rameses II—was received and feted upon his return from his victorious Syrian campaign, and narrowly escaped death at the hands of his brother, Armaïs. But although Mr. Petrie, while excavating the mound of Daphnæ, came upon the remains of a baked-brick foundation wall of much earlier date than the other ruins, which he judged, from a certain analogy with a similar structure met with at Tel-Nebesheh, must date from the epoch of the Ramessids, the objects recovered there, and the ruins among which they were found, only go back to the reign of Psammetichus I.

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[1] *Tanis*, Part II (Defenneh), W. M. Flinders-Petrie.

[2] II, 107.

It is outside the gates of Daphnæ that this monarch established the camp of his mercenaries, the Ionians and Karians, with whose help he had overcome the forces of the Dodecarchy, and had inaugurated the XXVI Dynasty, who ruled Egypt from Saïs in the Delta.[1] To judge from the character of the ruins explored by Mr. Petrie, the town of Daphnæ became far more Greek than Egyptian. Moreover its geographical position as an outpost on the eastern frontier of

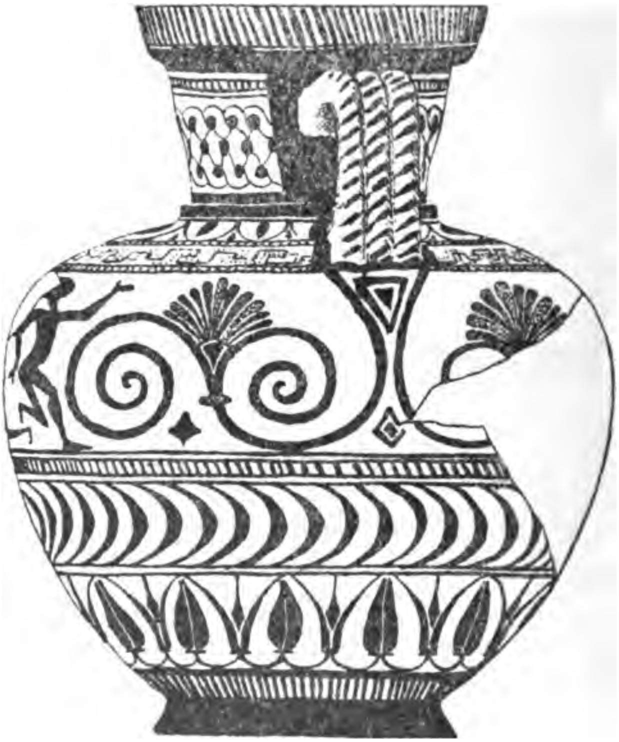

Fig. 35. Daphnæ. *Tanis*, Part II, pl. xviii, fig. 4.

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[1] Herod. II, 154.

Egypt brought its inhabitants into close relations with their Asiatic neighbors, and it is probable that many immigrants from Syria sought refuge in the Greco-Egyptian city at the time of Nebuchadnezzar's invasion of Judæa.[1]

After the defeat of Apries, (570-565 B. C.) Amasis removed the Greek troops to Memphis and replaced them at Daphnæ by an Egyptian garrison. At the same time he restricted all foreign commerce to Naukratis, in the Western Delta; and, from this time forth, Naukratis retained the monopoly of foreign trade, which its close proximity to Saïs, the seat of Egyptian government at that time, favored. Daphnæ, stripped of all that had contributed to its prosperity, then entered upon its decline; and all the pottery of Greek or mixed forms recovered among its ruins can therefore be chronologically restricted to a limited period—*i. e.*, 670–570 B. C.—according to Mr. Petrie,[2] no Greek pottery found there can be assigned a date later than 550 B. C. In the time of Herodotus [3] a Persian garrison held Daphnæ.

We are here, therefore, in possession of all the necessary facts bearing upon the history of our potsherds; and it is most instructive to find the ancient pottery of Greek or mixed types, made by Greek potters of the seventh and sixth centuries before our era, upon Egyptian soil, decorated with designs inspired not only by Egyptian, but by various Asiatic influences: The lotus-bud, worked into numerous different conceits, the Sphynx, which has already lost its Egyptian repose and gravity and gained in grace all that the artistic Greek has caused him to lose in dignity and in depth of meaning: and the Soul-bird, found side by side not only with the sacred tree of Mesopotamia, but even with certain decorations of Amazons declared by the highest authority upon the subject, Mr. Murray,[4] to be of Persian origin.

The active traffic of the period, which produced the eclecticism in art so noticeable among the Greek colonists of Daphnæ, is further illustrated by the result of Mr. Petrie's excavations at Tel-Nebireh, the site of ancient Naukratis, the Greco-Egyptian emporium of the sixth century B. C.

Here the explorers found traces of iron foundries and of a factory of pottery, etc., which show the town to have been a great centre not only of trade, as was already known, but also of manufacture.

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[1] W. M. Flinders-Petrie, *Tanis*, II, p. 49.

[2] W. M. Flinders-Petrie, *Tanis*, II, p. 52.

[3] II, 30.

[4] See *Chapter on Pottery*, by A. S. Murray, in the Vol. of *Tanis*, II, Nebesheh and Defenneh, p. 70.

From the factory of pottery and amulets we have in the Museum of the University, not only scarabs and other amulets, but the moulds themselves in which these were cast, and lumps of the coloring matter used to give to the glaze its particular hue. Among the numerous scarabs collected upon this spot by Mr. Petrie were types previously found in the Island of Rhodes.[1] These, executed by foreign workmen had, in many cases, betrayed their non-Egyptian manufacture by certain peculiarities of treatment, or by the faulty rendering of the hieroglyphs. At other points of the basin of the Mediterranean, objects of Egyptian origin have also from time to time been found. Although there is no doubt that many specimens of Egyptian art and industry found their way to different points of the civilized world through direct or indirect intercourse, many centuries before the foundation of Naukratis,[2] it is nevertheless evident that we have here the centre of trade where a large number of those which have been recovered were manufactured, and whence they were afterward distributed; possibly, in the course of time, serving as models for local workmen to imitate.

In the tombs of Etruria many objects have been exhumed, some of undoubted Egyptian manufacture, others not so typically Egyptian, which were thought, at the time of their discovery, to be foreign imitations of Egyptian models.[3] That which makes these particularly interesting in connection with the discoveries at Naukratis, is the presence among them of vases of green porcelain glaze—a glaze characteristic of the last millennium B. C.,[4] and which was very common in Egypt about the time of the establishment of the Greek colonies in the Delta, when Daphnæ and Naukratis became active centres. In the Polledrara tomb, near Vulci, such porcelain vases were found, inscribed with hieroglyphics of unfamiliar form, which had obviously been drawn by workmen unacquainted with the Egyptian language. Moreover, on one of the incised ostrich eggs also found there, was cut the Greek letter "A" in a form that precisely coincides with the writing of the Greek colonists settled at Naukratis in the VIIth century, B.C.[5]

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[1] *Naukratis*, Part I, p. 47.

[2] At Yalisos [Rhodes] where the tombs are of the most archaic type, a scarab of Amenhotep III was found. Duncker, *Hist. of Greece*, p. 53. See also for evidences of Egyptian influence in Cyprus under the 18th D., Dr. M. Ohnefalsch-Richter in *Verhandlungen Berlin Anth. Gesells.*, Jan. 1st, 1891; in "*Die Nation*," June 21st, 1891, and in *Mittheil. der Anthrop. Gesells. in Wien*, Nov., Dec., 1890.

[3] Birch, *Ancient Pottery*, 433, quot. *Micali Monumenti inéditi*, *Tavola* VII.

[4] *Catalog. Brit. Mus.*, p. 74, 1888.

[5] Murray. *Handbook of Greek Arch.*, p. 56. Figures of the God Bes and of Osiris

This alone must date the tomb, even though a scarab of Psammetichus I. had not been recovered among these objects.

Scarabs of glazed ware, one of which bore the cartouche of the same king, unguent vases, and other objects of Egyptian origin were recovered at Capo di Selvo on the site of ancient Tharras on the west coast of Sardinia, and among these there also occur vases of the pale green porcelain glaze already referred to.[1]

Mr. Wiedemann[2] mentions an ushabti of the Vth or VIth century B. C. which was discovered some 20 years ago among some Roman antiquities in Würtemberg; he also mentions other Egyptian objects, manufactured some time between the VIIth and the IVth centuries B. C., which have been exhumed near Cologne and Bonn. Others have been found in Gaul. Whatever may be the time at which the latter objects found their way to the distant lands where they have been discovered, all these facts tend to show that the commerce with Egypt was an extensive one—not limited to Asia Minor and the neighboring islands, but fully established and carrying far and wide the products of Egyptian civilization.

It is therefore impossible to doubt the influence which the art of Naukratis must have exercised over that of neighboring peoples, or the share which the great Græco-Egyptian mart had in bringing about the blending of exotic forms with the decorative designs peculiar to the Mediterranean nations.

ORIENTAL DESIGN.

That the artist-potters of Naukratis no more confined themselves to Greece or Egypt for their models than did their fellow-workmen of Daphnæ, is shown by the very handsome potsherds herewith given, which continue the story told by our Daphnæ pottery.

On the Naukratis vases, as on those recovered at Kamiros, the disposition of the decoration—which is divided into concentric zones—each zone developing its own theme, has been traced, by all who have made a study of the subject, to Assyrian influence.

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and Isis, as well as two Egyptian scarabs of green glaze, regarded by Mr. Steindorf as dating from not earlier than the XXVIth dynasty, have recently been recovered by Signor Falchi from ancient interments at Vetulonia on the Poggio alla Guardia. *Am. Journ. of Arch.*, Dec., 1891, p. 511.

[1] De la Marmora, *Voy. en Sardaigne*, II, 359. See also Perrot et Chipiez *Hre. de l'Art, etc.*, IV, and Birch, *Ancient Pottery*, p. 47, quoting p. 15, *Bull. Arch. Sard.*, 1857, p. 139.

[2] *Eine Statuette aus Würtemberg*, 1887.

As this artistic ware was never manufactured by either the Egyptians or the Assyrians, the generally accepted opinion as to the manner in which this style of decoration reached the artists of the Greek colonies, is that it was brought to them on Assyrian textiles, through Phœnician commerce. Mr. Murray[1] regards this peculiar type of pottery as having been invented by the colonial potters, who came into more direct contact with the East, and he thinks that it later found its way to Greece. He has also pointed out that the meanders, rosettes, and other geometrical designs which are scattered over the background of these animal scenes, are but a survival of the "geometrical" style characteristic of the Archaic Greek pottery, which the artist-potters could not bring themselves suddenly to discard altogether, when the new designs furnished them by Oriental textiles, gave rise to the type of decoration which we are now considering.

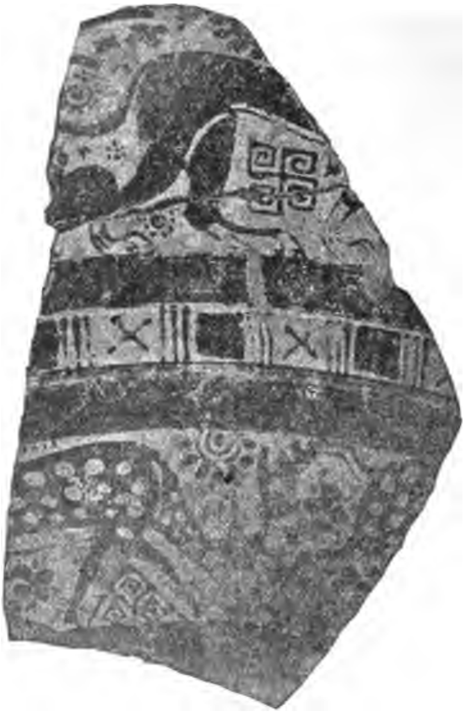

Fig. 36. *Naukratis.* Potsherd, in the Museum of the University of Pennsylvania.

One can but concur in these general conclusions which have been arrived at through much learning and a serious study of the question. Yet there seems to be another and more direct way than that furnished by the Asiatic textiles, through which these Oriental designs may have reached the Mediterranean artists, and may have suggested to them the highly specialized class of pottery known as the incised painted "Oriental" ware, by placing under their very eyes vessels upon which such devices were employed with telling effect.

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[1] *Loc. cit.*, p. 61.

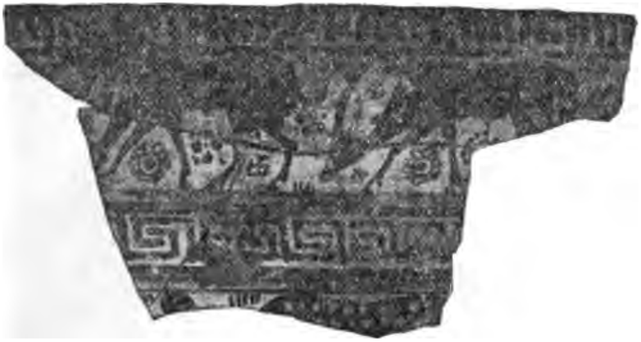

Fig. 37. *Naukratis.* Potsherd, in the Museum of the University of Pennsylvania.

On the accompanying potsherds, we have good specimens of the Naukratis incised type. The subjects are divided into zones. Here a series of grazing deer, ibexes or antelopes (figs. 36 and 37), not elongated out of all proportion—as on some of the Kamiros, Cyprus, and other Island vases, but well drawn in their natural shape and

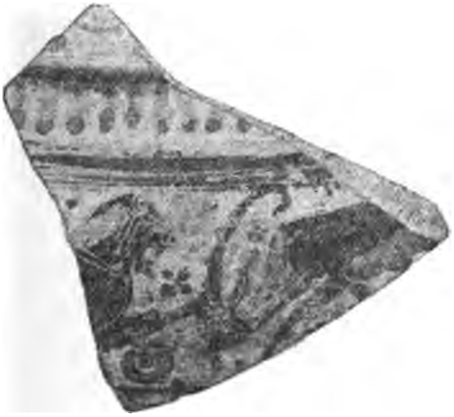

Fig. 38. *Naukratis.* Potsherd, in the Museum of the University of Pennsylvania.

executed in polychrome; above or below are series of wild animals, divided by well-defined conventional lines; whilst on the smaller sherd we have the well-known Asiatic theme of a lion attacking an ibex (fig. 38). In all these, the animals, their attitudes, the mode of

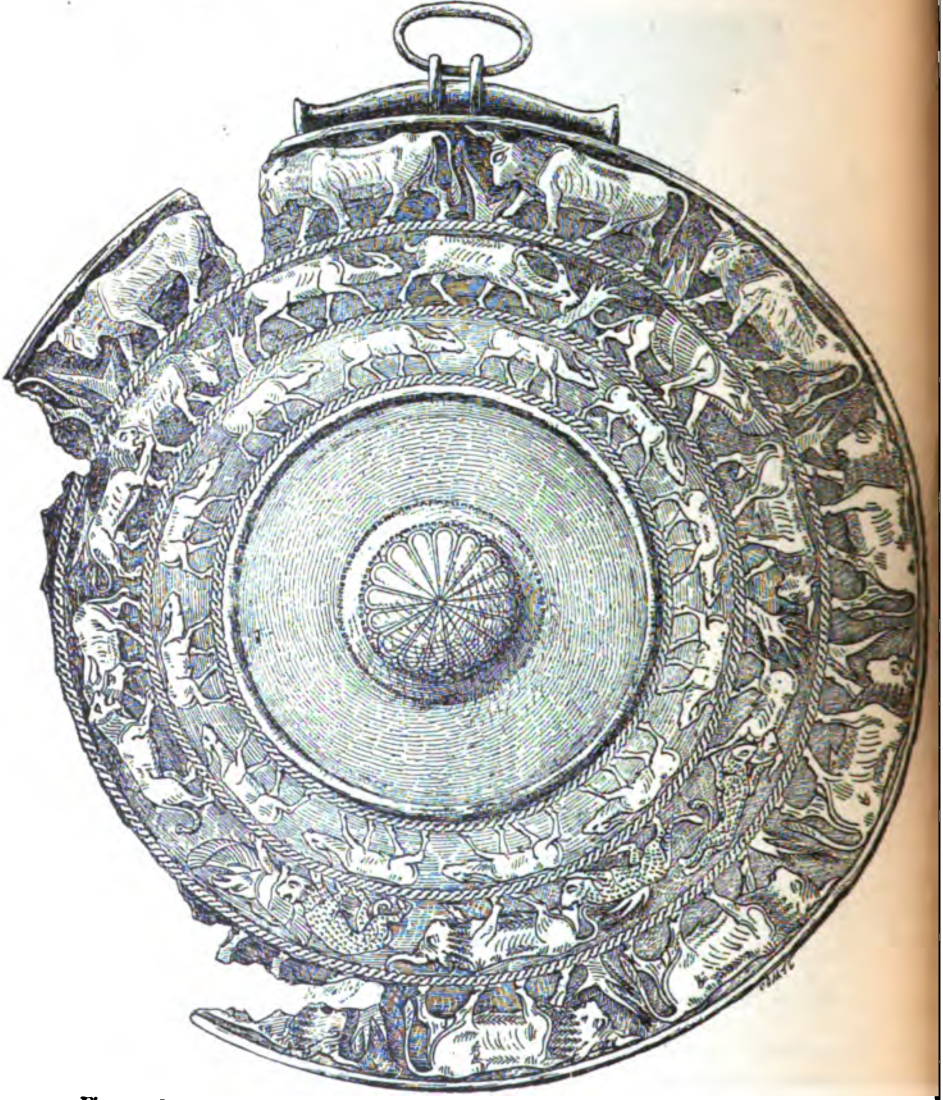

Fig. 39. Bronze Patera, from the N. W. Palace of Nimrud. Layard, *Monuments of Nineveh*, I series, plate 60.

treatment, and above all the incised outline of the principal figures—apparently a superfluous feature of the well-drawn painted design—immediately recall not only the embroideries on the Assyrian textiles, but more particularly the decoration to be seen on some of the engraved metal bowls called "pateræ," which have been discovered in such numbers in and out of Mesopotamia.[1]

Those to which I am particularly referring were found by Mr. Layard in the northwest palace of Nimrud, founded by Assur-nazir-pal (ab. 880 B. C.), but afterward repaired and inhabited by Sargon II (circa 740 B. C.). So that the objects found there should probably not be referred to a date earlier than the latter reign.

Some of these bowls are engraved with Egyptian subjects, and reproduce Hathor-heads, Sphinxes, scarabs, feathers of truth, cartouches, and even hieroglyphs.[2] But, even in the most Egyptian among them, there is something unfamiliar in the curve of the wings or in the disposition of the hieroglyphs, etc., that betrays their foreign origin, and convinces the most superficial observer of their non-Egyptian "provenance." Some present mixed forms; but others, such as the one here given,[3] (fig. 39) are decorated with processions of animals, in what has been termed by students of ancient art "true Mesopotamian style." And the bulls, the ibex, the leopard, the griffin, etc., which are represented either grazing or fighting—their attitudes, their general expression, are so similar to those on our potsherds, that it is difficult to avoid the inference that the men who designed each were inspired by the same models; and that the engraved outlines on the metal bowls suggested to the potter-artists the incised lines which they applied to their pottery.

It had long ago been suggested by competent authorities,[4] that the original models of these bronze "pateræ" first came from Mesopotamia, and were exported into Syria, where the industry became naturalized and perfected; use being made—for the sake of obtaining variety—not only of the usual Assyrian theme, but of those Egyptian and mixed designs that at one time proved so perplexing to antiquaries. Now, we know that, through the enterprise of the Phœnicians, and through their commercial relations with the trade centres of the Mediterranean Coast, these exotic forms were scattered abroad, and not only became known far and wide, but furnished local artists with models for the ornamentation of their own wares. Even as far as Etruria this type of decoration is found. On an Etruscan figure of hammered bronze, found near Vulci (Polledrara Tomb), and now in the British Museum,[1] the skirt of the statuette is ornamented with a zone of animals in relief. We have already seen[2] that the objects recovered in this locality were associated with Egyptian antiquities dating from the VIIth century B. C., and Mr. Murray[3] regards this figure as representing Etruscan art prior to 600 B. C.

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[1] For the influence of metal vessels upon Island and Greek pottery, compare Mr. Cecil Smith in *Journ. Hell. Studies*, V, 233, and in *Arch. Zeitung*, 1881.

[2] Layard, *Monuments*, II series, plates 59 to 68.

[3] *Ibid.*, pl. 60, Perrot and Chipiez. *Hre. de l'Art*, etc., II, 741.

[4] Perrot and Chipiez, *Hre. de l'Art*, etc., II, p. 749.

The conspicuous place which the stag and other cervidæ occupy on the vases decorated with these designs would, alone, point to Mesopotamia, where, if we may judge from its early and constant representation on the cylinders, this class of animal played, from the earliest times, an important part in the religious symbolism of the people.

According to Mr. Sayce,[4] the antelope was particularly connected with Ea, the great god of Eridu, to whom the gazelle likewise seems to have borne some relation.[5]

The latter animal was also identified with the God of Nipur, Mullil, who was called the "gazelle god,"[6] and with whom the goat was associated.[7] Indeed, it is apparent that the primitive zoölogists of Mesopotamia did not discriminate very closely between ibex and oryx goats and the cervidæ.[8]

Deer and antelopes of various kinds were held sacred in different parts of the Semitic world. They were not forbidden food, but bore a relation to certain divinities. Troops of sacred gazelles occur down to a late day at the sanctuaries of Mecca and Tabala, and in the island spoken of by Arrian.[9] Stags and gazelles occur as sacred symbols in

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[1] See *Hist. of Greek Sculpture*, I, p. 85, 2d ed.

[2] See above, p. 98.

[3] *Handbook of Greek Archæology*, p. 241, fig. 82.

[4] *Lectures on the Origin and Growth of Religion, as Illustrated by the Religion of the Ancient Babylonians*, 1887, p. 280, quoting W. A. I., II, 55, 27–30, and *Ibid*, II, 62, 39.

[5] A. H. Sayce, *loc. cit.*, p. 283, quoting W. A. I., II, 6, 7; 59, 5; 55, 31–33.

[6] Sayce, *loc. cit.*, p. 284, quoting W. A. I., IV, 70, 55; II, 59, 5.

[7] *Ibid.*, p. 285–6; quoting W. A. I., IV, 28, 3.

[8] Even Pliny, *Nat. Hist.*, VIII, ch. 89, enumerates among Capræ the roebuck, the chamois, the goat, and the antelope-oryx. The Roman offering of the "Cervaria Ovis," in which the sheep was made to pass for a stag, shows the close connection existing between these animals in the minds of the ancients.

[9] VII, 20.

Southern Arabia, in connection with Athtar worship; at Mecca, probably in connection with the worship of Al-Ozza; and in Phœnicia, both on gems and on coins of Laodicea ad Mare. An annual sacrifice of a stag took place at the latter place on the Phœnician coast, which was looked upon as a substitute for a more ancient sacrifice of a maiden, offered to a goddess whom Porphyry[1] calls Athene, whilst Pausanias[2] identifies her with Brauronian Artemis, supposing her cultus to have been introduced by Seleucus. Mr. Robertson Smith,[3] from whom I have borrowed these details, has, however, pointed out that the town[4] is much older than its re-christening by Seleucus, and that, if the goddess had been Greek, she would not have been identified with both Athene and Artemis. He regards her, in fact, as a form of Astarte, the ancient Tyche of the city.

Among the Greeks, deer were held sacred to Apollo at Delphi.[5] One of the most important among the archaic statues of the god—that executed by Kanakhos—which stood in the temple of Didymus, near Miletus (about VIth century B. C.), if we believe Pliny,[6] represented the god holding his bow and carrying a young deer upon his outstretched hand.

Deer and stags were also sacred to Artemis,[7] and the famous statue of this goddess in the Louvre[8]—which represents her, according to the conception of the artists of the IVth century B. C., dressed with the short chiton—shows her accompanied by the deer, her common attendant. A number of statuettes of Artemis-Kybele, with the deer or with the dog, were found by Dr. Richter at Achna, Cyprus.[9] Moreover, on many monuments, she wears the *nebris*,[10] or fawn-skin, over her chiton.

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[1] *De Abst.*, II, 56.

[2] III, 16–8.

[3] *Religion of the Semites*, p. 447, 1889.

[4] Ramitha in Phoen, acc. to Philo ap. Steph. Byz., quoted by Mr. Robertson Smith, *loc. cit.*

[5] O. Keller, *Thiere des classischen Alterthums in Culturhistorischer Beziehung*, pp. 90–93.

[6] Pliny, XXXIV, 19. The description is obscure; in this I have followed Collignon's interpretation.

[7] Comp. Callimachus' *Hymn to Artemis.*

[8] M. Collignon, *Mythologie Figurée de la Grèce*, p. 107. Compare the Corinthian Puteal as given by Mr. A. Michaelis in *Journ. of Hellenic Studies*, vol. VI, p. 48, on which Artemis is also represented with the deer which she holds by the fore-leg.

[9] *Ancient Places of Worship in Kypros*, p. 37, pl. iv.

[10] The nebris, or fawn-skin, and the ægis, or goat-skin, were associated with the gods in Greek mythology. The latter seems to have been regarded as possessed of divine or magic virtues. See Homer, *Iliad*, v, 738; xviii, 204; xv, 229, 307, 321; xxiv, 30.

Cervidæ were also sacred to Aphrodite.[1] Indeed, the worship of the Greek Artemis seems, in early times, to have been very much confused with that of female divinities whose attributes had little or nothing in common with the severe type of the stern goddess. And, difficult as it is to understand how the later Greeks could recognize the chaste sister of Apollo in such deities as the Persian and the Ephesian Artemis, we have already seen that, as a matter of fact, Astarte was identified by ancient writers, not only with Artemis, but also with Athene. Artemis was originally an Eastern deity; and Mr. Cecil Smith, in pointing out how frequently she figures on vases decorated with the "Oriental" design,[2] has only strengthened the evidence.

The recent discoveries of Dr. M. Ohnefalsch-Richter in Cyprus also tend to confirm the view[3] which sees in the different Greek goddesses mere aspects of the great Nature-Mother: In the archaic art of Cyprus, the same form—borrowed from that of Nana-Ishtar—was made use of by the Cyprian artists to represent Ashtoret-Aphrodite, and Tanit-Artemis-Kybele. Later on, however, the former divinity appears as a nude female form, pressing her hands to her breasts, whilst the latter continues to be draped.[4]

Shrines have been brought to light by the same careful explorer—belonging to about the same period as those from which our potsherds have been derived—in which Artemis-Kybele,[5] Aphrodite-Kybele,[6] Anat-Athene,[7] and Astarte-Aphrodite were respectively worshipped; and Dr. Richter's conclusions, drawn from such facts, derive these various forms from one original type, for which he claims an Asiatic genesis.[8]

The Ægis of Zeus (the word here used in the sense of shield) was made of the skin of the goat Amaltheia, whose milk was supposed to have nourished the infant god. Athene and Apollo are stated to have borrowed it from Zeus; see *Iliad*, xv, 229, 307, 318, 360; xxiv, 20; ii, 447, 449; xviii, 204; xxi, 400. (Comp. Smith's *Dict. of Greek and Roman Antiq.*, p. 34, 1891.) The nebris is also associated with Dionysus and his orgiastic *cortège* (*Ibid.*, p. 225).

[1] O. Keller, *loc. cit.*, p. 94, says that it was also sacred to Athene, and, at Phocis, to Isis (*loc. cit.*, p. 96). Compare Callimachus' *Hymn to Artemis*, v, 386, where Athene is said to have formed the flute of the bones of the deer.

[2] *Journ. of Hell. Studies*, vol. V, p. 237, on "Four Archaic Vases from Rhodes."

[3] E. Curtius, *Die griechische Götterlehre vom geschichtlichen Standpunkte*, 1875.

[4] Dr. Max Ohnefalsch-Richter, *Ancient Places of Worship in Kypros*, p. 42, pl. xi, 1891.

[5] *Ibid.*, p. 11.

[6] *Ibid.*, p. 12.

[7] *Ibid.*, pp. 15, 16, 23.

[8] *Ibid.*, pp. 30–32.

Apollo and Aphrodite seem to have been the most important divinities of Naukratis, and this reminds us that in the region of Paphos (Cyprus), Apollo occupied a conspicuous position by the side of the same goddess.[1]

The special association of the cervidæ with the worship of Apollo and with that of Aphrodite makes it likely that the frequent recurrence of these animals upon the Naukratis vases is not a purely fortuitous circumstance. And the fact that the sherds so decorated were found in the temene of Apollo and of Aphrodite—where they had originally been brought by the faithful as offerings—lends some support to the view expressed by Mr. Goodyear[2] that the decoration on these vases was symbolical. It is, at least, probable that it was selected, either by the artist himself or by the devout purchaser, with a view to religious symbolism, and as particularly appropriate to the end for which these vessels were destined.

Among the other mythological animals that are frequently represented upon the painted incised vases of Naukratis, is the boar—and as this animal is seldom, if ever, found as a symbolical decorative object among the antiquities of Mesopotamia[3] which are contemporaneous with the use of this "serial" design, its presence here deserves, perhaps, more than a passing mention.

The pig, in the pre-Semitic religion of Chaldæa, was sacred to the war-god Adar, or Ninib,[4] who was originally the sun-god of Nipur,[5] and was regarded as the offspring of the great local tutelary divinity, Mullil, the ruler of the under-world and of the dead.[6] Although a solar god, Ninib was, therefore associated with darkness and death, and Mr. Jensen,[1] quoting a hymn in which the god is addressed as the "light of Heaven and earth illuminating the interior of the Underworld," describes him as the East Sun, *before* it rises. He is also the "merciful one, who gives life, who causes the dead to live."[2]

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[1] *Ibid.*, p. 23.

[2] *Grammar of the Lotus.*

[3] As far as I know, pigs do not occur in the symbolical art of Assyria, where it was not a sacrificial animal. There is, however, a representation of a pig on a clay tablet from Babylon, reproduced by Mr. Babelon in *Manual of Oriental Antiq.*, p. 123. 1889.

[4] Sayce, *loc. cit.*, p. 153. The "Lord of the Asu." According to Jensen, *Kosmogonie der Babyl.*, the Asu of the woods is the wild boar.

[5] Sayce, *loc. cit.*, p. 152, quoting W. A. I., II, 57, 51, 76:

There is among the objects exhumed from the mound of Niffer, ancient Nipur, by the "Peters Expedition," which are now in the Museum of Archæology and Palæontology of the University of Pennsylvania, a fine clay representation of a pig. This specimen is a bas-relief about three inches long, of poorly-baked clay, but the animal is beautifully drawn, and modelled with a great deal of expression. It is an object complete in itself, and must have been used either as a votive offering or an image. It presents an archaic appearance, crumbles easily, and the clay, wherever it is broken off, exhibits the unbaked blue core.

[6] Sayce, *loc. cit.*, pp. 145, 146, etc.

He was called "Lord of the Swine," a title which, according to Mr. Sayce,[3] would appear to have been dropped and lost during the Semitic period of Mesopotamian history; at least, it does not occur in the later texts.

Wild boar's meat was forbidden food on the banks of the Euphrates, in the months of Ab and of Marshesvan;[4] and the very mention of the domestic pig is said to have been avoided in the Semitic-Babylonian and Assyrian inscriptions.[5]

Ramman,[6] the god of the luminous air, regarded in the later mythology as the husband of Ishtar, whose earlier consort was Tammuz, the sun-god of Eridu—when worshipped as Mâtu (Martu), the lord of the tempest, minister of Bel—was, it would seem, known as "Khummuntsir," an Akkadized form of the Semitic "Khumtsiru"—a pig.[7] As Bel of Nipur is the Semitic form of the ancient Akkadian divinity, Mullil,[8] Ramman, in this aspect, may be regarded as the equivalent of Ninib.

Complicated as are these myths, it seems evident that the animal we are now considering was connected with the sun-god in the early religion of Chaldæa; but with the sun-god in its fiercer and darker aspects, anthropomorphized as the warlike son of the lord of the underworld.

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[1] *Kosmogonie der Babyl.*, p. 475.

[2] Jensen, *loc. cit.*, p. 471, quoting K. 128.

[3] *Loc. cit.*, p. 153. In K. 161, 1–8, quoted by Mr. Sayce, one of the remedies prescribed for heart disease is "swine's flesh."

[4] I am indebted to Dr. Morris Jastrow for the information that the latter month is designated by an ideogram which, in II R., 57, 32, is a title of Ninib, whilst the chief ideographic element of the written name of "Ab" means "fire," and according to a passage in the inscription of Sargon, Cyl. 61, Ab is the month sacred to the fire-god, who is, of course, brought into direct connection with the sun-god.

[5] Sayce, *loc. cit.*, p. 83.

[6] Sayce, *loc. cit.*, p. 212, identifies this god with the Syrian sun-god Rimmon (Zech. xii, 11) whose untimely death was mourned in the valley of Megiddo by the plain of Yezreel every year, just as the death of Tammuz was mourned by the women of Phœnicia and of Jerusalem (Ezech. viii, 14), or as Adonis was mourned by Aphrodite (comp. *loc. cit.*, p. 227).

[7] According to Prof. Robertson Smith, *Religion of the Semites*, p. 201, swine's flesh was forbidden to all the Semites, and that animal was only sacrificed in certain exceptional rites on certain solemn occasions. The same author expresses a doubt (*loc. cit.*, p. 143) as to whether swine's flesh was "taboo" by the Semites because it was regarded as holy or as impure.

[8] Sayce, *loc. cit.*, p. 103.

Mr. Sayce[1] suggests that the Semitic abhorrence of the swine may have caused it to be used to symbolize the ancient rivalry of the sun-god of Nipur and of the sun-god of Eridu; but, as we find that the swine-myth underwent a similar process in other religious systems, a purely local explanation of the phenomenon which turned this animal into the adversary of the divine type that he had once personified seems insufficient, and it is much more likely that the swine, after having been associated with the sun in the underworld—*i. e.*, with the sun which, dying, is born again and brings with it all life and fertility, came, in the course of time, to represent the darkness that swallows or destroys the light and life-giving god, and thus assumed the part of his antagonist.

This seems to be the only way in which we can account for the contradictory position occupied in various mythologies by the swine.

Among the Egyptians, there is reason to believe that, in early times, this animal was not regarded with the aversion which it inspired later, probably under Semitic influence. It may be seen among the flocks of Amten, a high functionary of Pyramid times;[2] and, at that period, that animal was used along with others, in hieroglyphic writing, as the determinative for "herd."[3] The fact that the sow was sacred to Isis[4] also lends support to this view. The hippopotamus, an animal which seems to have been classed by the Egyptians with the swine,[5] was a favorite form of the mother-goddess, who in her name of Ta-urt, typified fertility; and who, although mythologically regarded as the consort of Set,[6] the brother and opponent of Osiris, was mentioned in the legend as having assisted Isis to bring forth Horos.

As the *mother of the gods*, Apet, who at Thebes in Ptolemaic times was held in highest veneration,[7] was represented under the form of a hippopotamus. In a papyrus in the Louvre collection,[1] in which the different attributes of the divine power are symbolized under various animal forms, the sow represents fertility and motherhood;[2] and the mother of Min, the mummiform generative god, was represented under the shape of a white sow.[3]

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[1] Sayce, *loc. cit.*, p. 236.

[2] Lepsius, *Denk.* ii, 5.

[3] Chabas, *Etudes sur l'Antiq. Historiq.*, p. 407.

[4] On sow-amulets is often inscribed the wish "that Isis may grant happiness to the owner of this sow." Maspero, *Catalog. de Bulaq.*, No. 4158. 1883.

[5] Lefébure, *Les Yeux d'Horus*, p. 54.

[6] The destructive power of the earth, who also typifies darkness as opposed to light. His connection with the earth is shown by the fact that the determinative of his name is a stone.

[7] Mr. de la Rochemonteix, *Rec. de Travaux.* Vol. III, pp. 73, etc., *Le Temple*

In the Todtenbuch, the swine seems to be more particularly connected with El-Kab, the ancient city of the South, whose vulture goddess, Nekheb, had from time immemorial typified Upper Egypt. In the chapter cxii, which bears some relation to this locality, the swine appears in the *rôle* of the adversary of light; and much more than an allusion is made[4] to the danger with which "the eye of Horos" was threatened at the hands of Set, metamorphosed as a black swine—the solar nature of the "eye of Horos" being made clear by the further remark that "its might burnt the black swine."[5]

The same chapter[6] also records the fact that oxen, gazelles, and swine were ordered by Horos to be sacrificed to the gods, the latter animal having been declared abominable by the sun-god Ra.[7] Set is often mentioned in the texts as having swallowed the eye of Horos,[8] or as having been compelled to throw up that which he had eaten,[9] and according to Chabas,[10] swine are frequently referred to as odious to Horos.

The classics also allude to the mythological character of the pig as the antagonist of Osiris. Plutarch,[11] for instance, relates that Typhon found the chest containing the body of Osiris whilst pursuing a sow

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d'Apet. See also Wiedemann, *Die Religion des alten Ägyptens*, p. 88–89, where the syncretism of the mother-goddesses into this type is discussed.

[1] No. 3148.

[2] Paul Pierret, *Le Panthéon Egyptien*, p. 37.

[3] Stèle de Metternich, Reinisch, *Monuments de Miramar*, 117.

[4] *Todt.*, chap. cxii, pp. 3, 4, 5.

[5] In a papyrus of Leyden, studied by Chabas, and which contains an incantation, it is stated that, from the burnt hind quarters of the "Sow of the Sun," there comes a fat that ascends to heaven and falls back upon earth in the shape of asps.—Lefébure, *Les Yeux d'Horus*, p. 58.

[6] *Ibid.*, chap. cxii, p. 6. Plutarch, *Is. and Osiris*, 31, says that only animals disagreeable to the gods were sacrificed.

[7] Comp. Herod, ii, 47, who says that swine were regarded as so unclean that the Egyptians washed in the river, without undressing, any one whom a pig had touched. Swineherds were regarded as unclean and compelled to intermarry.

[8] For instance, *Todt.*, cxvi, p. 1. *Denk.*, iv, pl. 46, p. 1.

[9] *Todt.*, chap. cviii, p. v.

[10] *Etudes sur l'Antiquité Historique*, pp. 404–5.

[11] *De Is. et Os.*, 18–42.

in the moonlight. This is obviously a corrupt version of the myth, for both he and Herodotos[1] state that pigs were sacrificed to the god and eaten once a year at the time of the full moon; and that this celebration took place all over Egypt at the same time—*i. e.*, on the eve of the feast of Osiris, on the day of the Great Lamentations of Isis and Nephthys.[2] Chabas[3] mentions the sacrifice of a pig as taking place at Medinet Abu at that time, the 25th of Choiak.

According to Egyptian texts, the great festival in honor of Osiris took place in Egypt at the time of the winter solstice, when the days are shortest; and they culminated after seven days of mourning for the death of the god. These occurred on the 24th Choiak. From the 12th to the 24th, elaborate preparations, prescribed by regulations, were made in the temples. Figures of Osiris were made of dough mixed with spices, aromatic woods, gold, silver, and even precious stones, all cast in a mould, and set to dry in the setting sun, embalmed and placed in a coffin.

At the appointed time these were taken in solemn procession on the Nile, at night, accompanied by the other gods, in 34 barks, illuminated by 365 lamps. After this the images lay in state in the temples for seven days, and were then buried in great pomp.[4]

In the island of Cyprus, swine were sacrificed piacularly from ancient times in connection with the worship of Adonis and Aphrodite, and wild boars were offered on April 2d. Mr. Robertson Smith[5] gives it as his opinion that this rite was originally intended to represent the death of the swine-god Adonis, and was not in its primitive form an act of vengeance for his death.

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[1] ii, 47. He says to the moon and Dionysos (*i. e.*, Osiris), and adds that on the eve of the festival of the god, every Egyptian sacrificed a hog in front of his house, and that the poor people, who could not afford to do this, formed figures of pigs out of dough, which they offered after baking them.

Although the Egyptian myth in which the pig plays a part is obviously a solar myth, the lunar element which appears to be associated with it in the narratives of Herodotos and Plutarch is further brought to our attention in a papyrus quoted by Mr. Lefébure (*Les Yeux d'Horus*, p. 52), in which the lunar god *Thoth* is represented armed with two knives and striking at a pig, whilst another vignette shows Horos, the sun-god, attacking seven swine.

[2] De Horrack, *Les Lamentations d'Isis et de Nephthys*, pl. i, p. iv, f. 3. Quoted by Lefébure, *Les Yeux d'Horus*, p. 48.

[3] *Loc. cit.*

[4] For details of these important "*mysteries*," see V. Loret *Les Fêtes d'Osiris au Mois de Choiak. Recueil de Travaux*, vol. iii, pp. 43–57; vol. iv, pp. 21, etc.; vol. v, pp. 85, etc. This celebration of the death of Osiris was followed by that of the new birth of the god.

[5] *Loc. cit.*, p. 392.

On the other hand, the warlike character of the sun-god of Nipur, "lord of the swine," reminds us of the Ares of Greek mythology, who, under the shape of the wild boar, slew the beautiful lover of Aphrodite.

According to ancient writers,[1] swine were, therefore, held especially sacred to Astarte and Aphrodite by the Syrians. Occasional sacrifices of swine were offered to the latter goddess at Argos[2] and in Thessaly,[3] but Prof. Robertson Smith[4] regards the Semitic origin of these as less clear than that of the rites connected with the Cyprian goddess.

The animal is a familiar figure in Greek legend; where it also plays the part of a god-sent scourge. The killing of the boar of Erymanthus is among the labors of the solar hero Herakles, and the exploits of Theseus against the boar of Crommyon, as well as those of Meleager against the Calydonian boar, sent as a scourge by Artemis, are too familiar to need dwelling upon.

It is certainly a fact that the pig played an important part in the sacrificial rites of the Greeks[5] and of the Romans. Swine were numbered among the sacred herds of the Greek temples,[6] and, according to Preller,[7] pigs were sacrificed to Herakles. We have already seen that they were also sacrificed to Aphrodite. But it is especially to Demeter, the earth-goddess, who presided over the fertility of nature and the fruitfulness of human marriage, that pigs were consecrated by the Greeks.[8]

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[1] Lucian *Dea Syria*, liv; and Antiphanus ap. Athen., iii, 49.

[2] Athen., iii, 49.

[3] Straton, ix, 5–17. In other localities, where no doubt a totemistic element survived, the sacrifice of swine to Aphrodite was specifically prohibited. See Smith's *Greek and Roman Antiquities*, vol. ii, p. 582.

[4] *Loc. cit.*

[5] In Greece the pig was the great purificatory sacrifice, whilst among the Semites the offering of this animal was connected with mystic rites, and was not an ordinary piaculum. See Robertson Smith, *loc. cit.*, 456.

[6] On an inscription containing a list of regulations concerning the enclosure of the temple of Athena Alea, discovered in Arcadia by Mr. Fougères and published by Mr. Bérard in *Bull. de la Correspondance Hellén.*, April, 1889, certain rules and fines are mentioned with respect to the "sacred herds," among which swine are numbered.

[7] *Griechisch. Myth.*, i, 303.

[8] Acc. to Herod. (v. 57, 61), the worship of Demeter was introduced into Attica by the Gephyræans, who stated that they came from Eretria, but whom Herodotos re-

In the Thesmophoria, a festival celebrated at seed-time in Athens, as well as in other places, pigs were sacrificed. And a scholion on Lucian's *Dialogues of Courtesans*, a translation of which is given by Mr. Andrew Lang in his interesting article on "Demeter and the Pig,"[1] tells how pigs were then thrown into "the caverns" of Demeter and Persephone,[2] and how the women went down into these recesses to fetch the remains of the victims, which they placed upon the altars." "And it is believed," says the scholion, "that whoever takes of this flesh and mixes it with the seed corn will have the richest harvest and abundance."[3]

After doing this they deposited there the "well-known images." These rites were called: "The carrying of things not to be spoken, and they are performed in the way for the fruitfulness of the fields and of human kind."[4]

Sir Charles Newton, in his excavations at Cnidos, on the site of the temenos of Demeter, discovered the crypts of the temple, in which were found certain small figures of pigs in marble, and at the very bottom the bones of swine and other animals.[5]

Votive offerings to Demeter are found, consisting of pigs, bearing children on their backs—probably brought to the shrine of the mother-goddess by wedded women anxious for offspring.

The pig was a common purificatory offering,[6] and in the usual representations of Demeter she accordingly appears accompanied by a pig and a purificatory torch.[7] In the Eleusinian Mysteries the initiated bathed in the sea, each with the pig intended as an offering to

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garded as Phœnicians. He also states that the worship of Demeter was originally derived from the Isis-worship of the Egyptians (ii, 59, 122, 123, 155), and that the Thesmophoria were introduced in the same manner (ii, 171).

[1] *Nineteenth Century*, 1887, vol. xxi, p. 559.

[2] Comp. Pausanias (viii, 25–4), who says that at Thelpusa, in Arcadia, there was a hole, sacred to Demeter Erinys, into which live pigs were cast, and that in Bœotia the people used to throw young pigs into crypts (*loc. cit.*, ix, 8–1).

[3] Acc. to Mr. Frazer (*The Golden Bough*, ii, p. 49), in Hessen and Meiningen pigs are eaten on Ash Wednesday or Candlemas, and the bones are kept until sowing time, when they are put into the field, sown or mixed with the seed in the bag. This is supposed to make the flax grow well (comp. *loc. cit.*, p. 29). Comp. E. Hugo Meyer, *Germanische Mythol*, p. 103, who, in addition to these facts, states that farmers stick a pig's tail into the ground at sowing-time; and that brides were presented with a pig's tail on their wedding-day.

[4] Mr. A. Lang, *loc. cit.*, p. 562.

[5] Sir Charles Newton, *Halicarnassus*, pp. 383, 391, 422, cf. plate viii.

[6] Æschy., *Eumenides*, 283.

[7] Smith's *Dict. of Greek and Roman Antiq.*, ii, 833, 1891.

the goddess,[1] and each sacrificed a pig on the 17th of Boedromion—*i. e.*, the day of the great Eleusinia. There is little doubt that every family did the same at Athens.

Mr. Frazer[2] suggests that the pig which, later, was sacrificed to Demeter, was originally the goddess in animal form. This seems very probable, and it is likely, as remarked by Mr. Lang, that the fecundity of the animal, joined with its habit of rooting up the earth, may have primitively led to its association with the under-world and its rulers.

According to Livy in the rites of the Roman fetiales—rites which may possibly go back to a time when stone implements were still in use among the ancestors of the ancient inhabitants of Italy[3]—the victim slain by the pater patratus with the sacred flint preserved for the purpose in the temple of Jupiter Feretrius, to consecrate the solemn oath sworn by the Roman people, was a hog.[4]

This animal was, moreover, held especially sacred to the Lares,[5] and the sow was closely connected with their worship as well as with that of the Manes.[6] In the Cerialia, a spring festival celebrated at Rome

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[1] Plutarch, *Phocion*, xxviii, quot. by Mr. Lang, *loc. cit.*

A pregnant sow was offered to Demeter at Mykonos and Andania.

[2] *Loc. cit.*

[3] E. B. Tylor. *Researches into the Early Hist. of Mankind*, p. 226.

[4] Livy, i, 24; xxx, 43. "If by public counsel or by wicked fraud they swerve first, in that day, O Jove, smite thou the Roman people as I here to-day shall smite this hog; and smite them so much more, as thou art abler and stronger," and having said this he struck the hog with a flint-stone.

[5] On an ancient altar, dated in the ninth year of Augustus, and dedicated to the Lares Augusti, which was exhumed in Rome on the banks of the Tiber, near the little church of San Bartolomeo de'Vaccinari, there is a bas-relief representing four "Magistri" about to accomplish the rites of their cultus and to sacrifice a bull—the animal more particularly identified with the genius of Augustus, and a hog, the special offering to the Lares. See *Revue de l'Hist. des Religions*, Vol. XX, p. 39–40. *Bull. Arch. de la Religion Romaine*, by George Lafaye.

The pig also appears associated with the bull and with the sheep in the ancient purificatory rite of the "Suovetaurilia," which was in its origin dedicated to Mars in his primitive agricultural aspect; and which, with the development of this deity into a war-god, was afterward applied to warlike purposes.

[6] *Tibul.*, i, 10, 26. "Placaris . . . Lares avidaque porca," Hor. Od., iii, 23, 4; "Immolet . . . porcum Laribus," Sat., ii, 3, 164; Prop., iv, i, 23: "Parva saginati lustrabant compita porci," in honor of the Lares compitales. Compare J. A. Hild, *La Légende d'Enée*, in *Revue de l'Hist. des Religions*, vi, p. 151, etc.

In the legend of Lavinium, the sow, escaping from the knife of the sacrificing priest, marks the spot where the town shall be built, and according to Varro (*Re Rustica*, ii, 4, 18), quoted by Mr. Hild, *loc. cit.*, p. 165, a brazen image of the thirty in honor of Ceres, and intended to commemorate the return of Proserpina to earth, no bloody sacrifice was permitted save that of a sow.[1] According to Macrobius,[2] a sow or a ewe lamb was offered to Juno-Lucina on the calends of every month, and there seems to be good reason[3] for connecting these rites with those which were celebrated in Cyprus in honor of Aphrodite, to whom, as we have already seen, both the goat and the pig were sacrificed.

We, therefore, find the pig here also connected with death and with life, with the fecundity of motherhood and with the darkness of the grave, and among other Aryan peoples the hog, as well as the wild boar, is a disguise for the sun in the night or in the darkness of the clouds.[4]

Many legends, fairy-tales, and ancient customs preserved in Europe betray the ideas which, in the symbolism of the Aryan races, were once attached to the swine. Among them it represented fat and plenty.

According to Mr. E. Hugo Meyer, the pig is one of the oldest as

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small pigs mentioned in Æn. viii, 43, 81, was set in the public place, and the body of the sow herself was preserved in brine.

[1] *Ibid.* Fast. iv, 414.

[2] i, 15, 19.

[3] See Prof. Robertson Smith, *loc. cit.*, p. 453.

[4] Gubernatis, *Zoological Mythology*, ii, p. 6.

In the Rig-Veda (i, 114–5; I am indebted for the following passage to Prof. E. W. Hopkins) the sun is invoked as " the wild boar of the sky, red, with braided hair, swift, beauty(ful), we reverently call upon, carrying in his hands the best medicines. May he grant us protection, shelter, and guard." In the Puranas (Gubernatis, *loc. cit.*, ii, p. 8) the third avatar of Vishnu is the wild boar; and a transparent myth given at length by Burnouf (*L'Inde Française*) tells how the sun-god Vishnu, transforming himself into a wild boar, pierced through the earth and penetrated to the infernal regions, where he saw the feet of Mahadeva. On his return he was saluted the first-born of the gods. Yet the same contradiction which exists in other mythologies and associates the swine with darkness, the enemy of light, may also be detected here, and a passage of the Rig-Veda (i, 61, 6. Comp. v, x, 99—6) shows us the god, killing the monster wild boar who steals that which is destined for the gods, with the weapon stolen from the celestial blacksmith Tvashtar. According to Mr. Gubernatis, in the Hindu mythology, where the storm plays so important a part, the boar is not only connected with light and fertility in their struggle against the darkness of night or of winter, but we also find it associated with light and fertility in their contest with the darkness of the storm-cloud. Indra himself takes here the form of the boar (Gubernatis, *loc. cit.*, ii, p. 8).

In the Avesta (*Yast* x, 70, etc.) this animal is the embodiment of Verethraghna, who, as such, is there associated with Mithra, before whom he runs "wrathful" and "death-dealing" to his foes. Comp. x, 127, where it is said that "behind him drives Atar all-ablaze"; and the awful kingly glory.

well as the principal sacrificial animal among the Teutonic peoples—who reared it for the purpose, and ate it in all solemnity at stated times. It was sacrificed to Freyr,[1] at the Yule-feast, at which time offerings were made to insure the fertility of the soil.

On the Lower Rhine, the "St. Anthony's parish swine"[2] was distributed and eaten on January 17th; and similar solemn sacrifices of the pig took place at various dates in different places—which were connected either with the beginning of winter, or with harvest-time. A pig of dough was offered at Christmas-time; and this rite was performed in the same intention as that practiced in the North—and according to which the Yule-tide male and female goats were baked and mixed with the seed-grain when sown.[3] We have already seen that such rites were common in antiquity,[4] and that, in these substitutes, was concealed a "mystery."

Their meaning is abundantly explained by the customs which, as already noted, are preserved in Meiningen; where the picked bones of the sacrificial hog are mixed and sown with the seed-grain. We have seen, where dealing with the worship of Demeter, what were the ideas that inspired the rites of which these customs are a survival.

In Germany, as formerly in England, the custom of serving an ornamented boar's head at dinner on Christmas day is, very likely, a survival of the ancient rite celebrated at the time of the winter solstice, when the boar was sacrificed to the god who—descending then into the underworld—was to return again, bringing life, fertility, and plenty to the world. And there are legends too numerous to find place here, which are more or less closely connected with the ancient myth, and in which the tusk of the boar appears as life-giving in the morning and as death-dealing in the evening.[5]

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[1] The Spring Sun-God. See E. H. Meyer, *Germanische Mytholog.*, p. 103. This author, however, regards the swine-myth as purely a storm-myth.

[2] "St. Antoniusgemeindeschwein," *loc. cit.* I am told that, in some parts of Russia each village sacrifices a hog to the House-spirit, or Lar, on March 25th. This is divided among the villagers, and every man forthwith buries his piece under his door-step. This insures prosperity and plenty. After this the ceremonies of the "Death-week" take place. These culminate after several days in the driving out of death—who is finally drowned under the shape of a hideous dummy.

[3] E. H. Meyer, *loc. cit.*, p. 103.

[4] The "Kavanim" which, according to Jeremiah (vii, 18), the women of Judah and of Jerusalem made of kneaded dough, and which they dedicated to the "Queen of Heaven," were either, like the figures of Osiris (see above, p. 111), images used in the worship of Tammuz, or substitutes for living offerings.

[5] Gubernatis, *loc. cit.*, ii, pp. 14–16.

Although the Eddas may appear of too recent origin to be of any very decisive value in the interpretation of mythical ideas that seem to reach back to the very dawn of religious thought, it is interesting to note how very clearly they explain the notion which lies at the foundation of the antithesis in which the swine plays a double *rôle* as a solar symbol, and at the same time as a funereal offering associated with the under-world, and regarded not only as suitable food for the Manes, but as the embodiment of ever-renewed life.

They show us the boar with "golden bristles," the "boar of war," representing the sun, "*glowing in Walhalla,*"[1] and it is upon its substance that the souls of the immortal heroes feed to all eternity,[2] for its life was ever renewed.[3] In their mythology the boar was especially sacred to Freyr, and to his sister Freyja. The latter was a nature-goddess, and was closely associated with her brother in his character of the "sun regenerated in the spring." The golden boar, the symbol of the sun, is therefore connected with her, as well as with Freyr.[4]

The ideas embodied in the symbolism of the swine, as it appears in the Eddas, bring us back, therefore—at the end of the journey through space and time, which we have undertaken in pursuit of the pig—to our original starting-point; that is, to very nearly the same stage of the myth as we found existing in pre-Semitic Chaldæa—where we saw the swine-god in the underworld, *i. e.*, the type of light, concealed in darkness—worshipped as the giver of life, born of death.

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[1] I am indebted to Dr. Hermann Collitz for the following passages bearing upon the subject, which he has had the kindness to collect for me: *Song of Hyndla, Older Edda, cf. Corpus Poeticum Boreale*, vol. i, p. 226, 19: "Thou seemest to dream! to say that I have my lover with me on the journey to Walhall, where the swine Gullinbursti [*i. e.*, golden bristle] glows; Hildisvini [*i. e.*, the boar of war] which the skillful dwarfs Dain and Nabbi wrought for me."

[2] *Grimnismal, Older Edda, cf. Corpus Poeticum Boreale*, i, p. 75, 18: "Andhrimnir [*i. e.*, Breath-Sooty] cooks Saehrimnir [*i. e.*, Sea-Sooty, the hog], in Eldhrimnir [*i. e.*, Fire-Sooty, the kettle], the best of bacon; but few know what the Einherjar [*i. e.*, Host of the Chosen] live on." This extremely obscure passage receives elucidation from another in the later Edda, which evidently refers to it: "Gylfaginning, c, 39:" ". . . . Never is the crowd in Walhall so great that the meat of the boar whose name is Saehrimnir was not sufficient. This one is cooked every day, and every night it is whole again." Then the above-quoted passage of the older Edda is given. At the funeral burning of Baldur and his wife Nanna, many guests were present: "Odin and Frigg, and the Valkyrjur, and Odin's ravens and Freyr, the sun-god, drove in his car, dragged by his boar, whose name was Gullinbursti (or Slidrugtanni). Heimdall rode on his stallion Gulltopp, and Freyja drove with her cats."

[3] The boar eaten every day by the Einherjar—*i. e.*, the heroes in Walhall—and reviving every night, is an image of the sun. (Simrock, *Deutsche Mythol.*, 5th ed., p. 188.)

[4] Mogk, *Teutonic Mythol.*, in Paul's *Grundriss*, i, p. 1109.

From the above it would seem that the swine had been very generally associated by primitive men in the early stages of their religious evolution, with mother-earth and the Chthonian powers ruling the underworld. With the development of solar worship, which properly belongs to the period when man passed from the pastoral to the agricultural age, and with the recognized influence of the sun upon the fecundity of the earth, the swine was taken as a symbol of the sun beneath the horizon, issuing forth from the night, and it thus became particularly associated with the male element in the return of light, of life, and of fertility. It is evidently a later outgrowth of the myth that made of him the type of the darkness of winter, or of the storm, which overcomes the radiance and power of the sun; and that, by a process common in mythology, caused it to personify the adversary of the god, one of the aspects of which it had once been used to symbolize.

If we keep in view the Asiatic origin of Aphrodite, her close connection with the mother-goddesses of Cyprus and Asia, and the myths which connect her with the vernal sun-god, lord of the swine, killed to be born again, it is easy to understand the important position which the animal we are considering occupied in her worship; and why it should occur as a favorite theme upon the decoration of the vases recovered at Naukratis, where that goddess was evidently held in high veneration.

Indeed, rare as is the swine in the later symbolical decorative art of Mesopotamia, it is a form commonly used not only by the Greek artists of the Delta, but by those of Greece and of the Mediterranean basin who constantly introduce it among the animals composing the original series in the "Oriental" design, as it appears in Assyria, whence, carried by commerce, it found its way at least as far as Etruria.

There is in the "Lamborn Collection" now deposited in the Pennsylvania Museum and School of Industrial Art, in Philadelphia, a large shallow bowl of very coarse red unglazed ware, the rim of which is decorated with series of animals stamped in low-relief, whose attitudes and general expression are very similar to those on our sherds. Among them is one which I take to be a boar. I am indebted to the kindness of the owner, Dr. Robert H. Lamborn, for the information that he was induced to purchase this bowl in Rome some years ago, because of its close resemblance to similar specimens forming part of the sepulchral furniture of the Campana tomb at Veii. As the interments in this locality are considered earlier than 400 B. C., it is interesting to find that our design had become sufficiently common to be adapted to and stamped upon such coarse ware, not later than the fifth century B. C. We have already seen that it occurs on a bronze figure found in the Polledrara tomb; and another example may be seen, applied as a border, in the incised decoration of a fine bronze cista from Palestrina (ancient Prœnesta), now in the British Museum.[1] On this the boar appears between a lion and a leopard—the latter is attacking him from behind; and the attitudes of the animals are strongly suggestive of the scenes depicted on the Assyrian patera reproduced above (fig. 39).

After what has been said above with regard to the worship of Kybele in Cyprus, and of the various foreign types which Dr. Richter discovered there, as it were, in process of formation, one need not wonder at finding the Phrygian lion—the animal sacred to the great Phrygian mother-goddess, "Matar Kubile,"[2] used as a favorite theme upon the painted vases of Naukratis in the sixth century B. C.[3]

The accompanying potsherd (fig. 40) is only one of many examples, some of which reproduce the well-known group which is familiar to us from the gateway of the Acropolis of Mykenae—two lions facing each other—that is, the typical heraldic motive commonly met with on the tombs of Phrygia, and through which if, as is probable, Mr. W. M. Ramsay[4] is correct in his interpretation of the Phrygian ideas as to the hereafter, the sepulchral monument became a shrine dedicated to the mother-goddess.

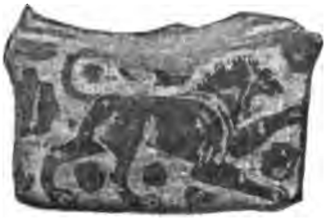

Fig. 40. Potsherd from Naukratis in the Museum of the University of Pennsylvania.

These few fragments of broken pottery show us the Mediterranean region in the light of a huge intellectual churn into which the most heterogenous elements were thrown, not alone by conquest, but more particularly by peaceful traffic; and out of which sprang many of those decorative forms which the Greeks idealized and handed down to us.

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[1] Murray, *loc. cit.*, p. 143, fig. 57.

[2] W. M. Ramsay. *Sepulchral Customs in Ancient Phrygia. Journ. Hell. Studies*, v, p. 246.

[3] *Loc. cit.*, pp. 254, etc.

[4] *Loc. cit.*, pp. 254, etc.

That such commercial activity had its origin in the far-distant past there could be no doubt, even though the recent discoveries of archæologists on various independent points of the ancient world did not all lead to the same conclusion. The researches of Dr. M. Ohnefalsch-Richter[1] in Cyprus, of Mr. Petrie[2] at Kahun and at Gurob, of Signor Ossi[3] in Sicily, etc., all give us glimpses of an established intercourse of the civilized peoples of the Mediterranean among themselves and with the East, long antedating the events brought before us by the objects now under consideration.

The fact that their relations with one another were sufficiently close to lead to an organized and concerted movement against so formidable a power as that of Egypt under the Ramessids—by such distant allies as the Libyans, the Maxyes, the Tyrrhenians, the Sikels, the Sardinians, the Achæans, and the Lykians in the second millennium B. C., as appears from the inscription of Karnak,[4] necessarily implies the existence of a long period, during which inter-commercial and political alliances could gradually be formed and cemented by the civilized Mediterranean nations of pre-Homeric times.

The recent discoveries of Mr. Petrie in the Fayûm, which tend to show that such a condition actually did exist in the ancient world at a much earlier period than has hitherto been admitted, interesting as they are, should logically have excited less surprise. The new facts fit in perfectly with the scientific probabilities of the question, as it now stands under the light shed upon it by other independent researches.

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[1] See *Mittheil. der Anthrop. Gesells. in Wien*, November and December, 1890, and *Verhandl. Berlin. Anthrop. Gesells.*, January, 1891.

[2] *Kahun, Gurob, and Hawara*, 1890. The earliest mention of an Egyptian king making an expedition towards the people of the North—*i. e.*, the Ha benu—dates from the reign of S'Ankhara XI dynasty.

Mr. Petrie has found in the Fayûm traces of light-haired and other foreigners, and has gathered evidence to show that Etruskans, Libyans, and people of the Ægean Sea lived in the Fayûm as early as the third millennium B. C. In tombs of the XIIth dynasty he has found Cypriote pottery and vases similar to the earliest Italian pottery. Similar ware was also found by Mr. Naville at Kha'aneh, associated with objects of the XIIth and XIIIth dynasties. (See *Illahun Kahun Gurob*, p. 10.)

[3] Signor Ossi's researches in Sicily, conducted under governmental auspices, have shown that the Mykenæ culture extended as far as that island. The Siculi were probably among the people whom the hieroglyphic inscriptions above referred to describe as having taken part in the attack upon Egypt under Meneptah.

[4] Duemichen *Hist. Inscr.*, pl. ii. E. De Rougé *Les Attaques*, etc., pp. 8, 9.

That such an intercourse, carried on, directly or indirectly, by the civilized Aryans with Egypt and Mesopotamia should have brought about an exchange of thought, and should have been the means of spreading certain arts and industries as far and as fast as the products of these could travel, requires no argument.

This fusion culminated, in the VIIth century B. C., with the foundation, in the Delta, of the Greek colonies of Daphnæ and Naukratis; and we scarcely need wonder if, from the shores of Sardinia to the mountain fastnesses of Phrygia,[1] from Nubia to Würtemberg, we may even now, after millenniums, recover vestiges, faint though they at times may be, of the deep impression left upon the Aryan mind by ancient Oriental thought.

A cordial vote of thanks was offered Mrs. Stevenson for her address. A collection of Egyptian objects from the University Museum, comprising coins, bronze objects, and pottery was afterward exhibited. Mr. Culin exhibited a set of circular Indian playing cards from Lucknow, India.

MAY 7TH.

Mr. Culin read the following paper, entitled

"SYRIAN GAMES WITH KNUCKLE BONES."

At the beginning of a series of objects in the University Museum, designed to show the origin and development of the playing card, are a pair of small bones, which are familiarly known to English-speaking people as "knuckle bones." Seldom, if ever, used in this country, these bones, from the hind legs of sheep and certain other animals, have been famous for their employment in games from the time of classical antiquity. They are, in fact, the *astragali* of Greek and Latin authors. The four positions in which it is possible for them to fall were called by the latter *supinum*, *pronum*, *planum*, and *tortuosum*, and corresponded with the throws of three, five, one, and six with dice. Certain dice—if not, indeed, the cubical dice—with which we are familiar, derived their origin from these natural objects, which were reproduced by the ancients in ivory, glass, and earthenware, in bronze, as seen in a fine example in Mr. Sommerville's collection in the Metropolitan Museum, New York, and even in precious metals, as gold itself. English boys used them in their games 200 years ago, according to that celebrated chronicler of games, Dr. Robert Hyde, and knew the four positions as "put in," "blank," "half," and "take all," a nomenclature that survives on a kind of tetotum, and may exist among English children at the present day. Among the Germans they are called *bückelbein*, and in France they are popularly used by the children as "jackstones," under the name of *osselets*, or "little bones."

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[1] In the ornamentation of the facade of some of the rock-cut tombs of Phrygia, the lotus-bud, mixed with the Mesopotamian "palmette," in the well-known pattern so popular during the last millennium B. C., appears, along with the geometrical designs proper to the Thrakian style of decoration. Messrs. Perrot and Chipiez (*Hist. de l'Art*, v, p. 191) see in the peculiar execution of the lotus-bud above mentioned, an intention on the part of the artist to represent an acorn. But there is no possible doubt that the model, though perhaps misunderstood by the local artist, who was probably unacquainted with the form before him, was the common mixed lotus and palmette design so familiar to us.

Among the Turks, Arabs, Persians, and Armenians the four positions of the knuckle bones receive the names of as many classes of human society; thus, among the Persians, according to Dr. Hyde, they are called *Duzd*, "thief;" *Dihban*, "peasant;" *Vezir* and *Sháh*. It does not seem difficult to trace a connection between the throws thus designated and the coat cards of our playing cards, or even with the pieces in the game of chess, since chess is regarded by some to have been played originally according to the throws with dice.

Indeed, it may be assumed that these natural *astragali*, or "knuckle bones," occupy a most important place in the early development of many celebrated games. In view of this, and the fact that the recorded information concerning their use, especially in modern times, is not very satisfactory, it was with considerable pleasure that the writer was able to take down from the lips of a young Syrian, at present living in Philadelphia, the following account of games with knuckle bones as played by him in his childhood in his native city of Damascus:

It should be premised that the Arabic word *ka'b* (our word cube), by which these bones are called in Syria, as well as in many parts of the East, has the same meaning (the ankle, or the ankle bone), as their Latin name, *talus*, and the Greek, *astragalus*.

One of the commonest games among the Syrian boys is called *khut*. A circle of one, two or three yards in diameter is drawn on the ground, and the children each put in from one to five *ka'b*, which they range in a line across the middle of the ring. Then, standing opposite to this line, and toeing the circle, they each toss a *ka'b* at the row, and the one who comes nearest is entitled to play first. The game consists in knocking the *ka'b* out of the ring with another *ka'b*, which is held between the thumb and forefinger and thrown as hard as possible, with a kind of twist. The *ka'b* from the right and left leg constitute a pair, called respectively *yisr*, "left," and *yemene*, "right," which are held somewhat differently in shooting. The players shoot in turn, and each continues playing until he fails to knock a *ka'b* out of the ring. After the first round they may take any position they choose, always, however, toeing the circle. The game continues until the last *ka'b* is knocked out, and is played for "keeps."

Boys take their *ka'b* to school as our boys do marbles, and often carry them in pockets made for the purpose in their voluminous trousers, or in a bag which they suspend from their neck. They buy them at butcher shops, where they are sold at the rate of from two to five for one cent. The new ones are the most valued, as they are stronger and heavier, and better in consequence to shoot with. When a *ka'b* gets old, a hole is frequently bored in it and filled with lead, in order to give it weight. It is important that the shooter should be large and heavy. The sheep in Syria are larger than the sheep of this country, and the *ka'b* are also larger. The bones from cows and camels are sometimes employed, but they are too large to be used by little children, and it is considered unfair to play with them. The boys regard certain shooters as lucky, and value them highly in consequence. "This one," they say, "will take three at a throw." They call them by various names, such as "lion," "ostrich," "tiger," and a boy will often keep a favorite shooter for a year or more. During recent years *ka'b* have fallen into disuse among boys in cities like Damascus, having been supplanted by marbles, but they are still played by the country children.

Killet wa-ka'b, "marbles and *ka'b*," is also a popular game. The players each put down the same number of *ka'b*, standing them on their side, at a distance of one to two yards apart, along a straight line at right angles to the base. They stand at the base and shoot in turn with the marbles at the line of *ka'b* and endeavor to knock them over, each taking the ones he overturns. If a player can hit another marble, the latter becomes *mat*, "dead" (the same word, mate, that we use in chess), and must give up all the *ka'b* he has taken to the one who hit him. The players shoot with their thumbs, as is the custom here, or else rest their left hand on a support, as a piece of broken pottery, and drive the marble from it by forcibly twitching it with the first or second finger of their right hand.

Kish steh is a game of tossing *ka'b*. In it the position called by the ancients *planum* is called *kish*, while that called *tortuosum* is known as *stich*. *Supinum* and *pronum* are known respectively as *qât*, "robber," and *chammâr*, "ass." Each player puts the same number of *ka'b* into the game, and the first player tosses them into the air. If one or more of them falls *kish* he takes all that at the same time fall *stich*. If one or more of them fall *qât*, "robber," he loses his turn, and if he has won any *ka'b* he must put back as many as fell *stich* into the game; or, if one or more fall *qât* and one or more *stich*, the throw is called *shisht*, and he must put back all he has won.

Ya Nasib is a kind of childish fortune-telling that recalls the "rich man, poor man, beggar man, thief," counted on the buttons of the coat among children here, and is a favorite amusement at children's entertainments. In it the four positions of the *ka'b*, are called *Sultan Vezir*, *Ashik*, "lover," and *Chammâr*, "donkey." The game is commenced by asking: "O, *ka'b*, what is so and so?" mentioning the person by name. One *ka'b* is then thrown, and as it falls that person is declared to be a Sultan, Vezir, lover or donkey. Questions are then asked, such as, Where does he sit? Where does he sleep? With whom does he eat? With whom does he talk? and so on, which are answered: "With the Sultan," "With the Vezir," etc., according to the throws. The questions are concluded by asking: "O, *ka'b*, what will he become at last?" This game is played by boys and girls, and by grown persons as well.

Matslûm is a game of forfeits. A number of players sit in a circle and throw one *ka'b* in turn. The one who first makes the throw of *kish* becomes Sultan, and the one who next throws either *kish* or *stich* Vezir. The latter twists his handkerchief or arms himself with a ruler to administer punishment. The other players then continue to throw in turn, and if the *ka'b* falls on its side in the positions before described, as *qât* or *chammâr*, the thrower cries out *anâ matslûm*—"I am aggrieved." The Vezir asks, "Who injured you?" The player thereupon points out some one in the circle. The Sultan inquires of the injured one, "What shall we do with him?" and the injured one tells the number of blows the Vezir shall inflict. Sometimes, instead of being beaten, the person who is accused is required to pay a forfeit, as by being made to dance or bark as a dog, kiss the hands of all present, or tell a story.

* * *

The Rev. Héli Chatelain, for some time a missionary at Loanda, Africa, presented through Mr. Culin a collection of bronze coins made for the colony of Angola by the Portuguese Government. A vote of thanks was offered to Messrs. Chatelain and Culin for the gift.

A photograph of the Count de Waldeck, bearing his autograph written in his 103d year, with a presentation copy of his memoir on *Le Sacrifice Gladiatorial* was presented by Francis C. Macauley, Esq., through the Recording Secretary. These objects were regarded with interest, as the Count de Waldeck had been a Corresponding Member of the Society, and the friend and correspondent of its late President, the Hon. Eli Kirk Price.

OCTOBER 1ST.

Francis Jordan, Jr., made a communication with reference to explorations he had recently conducted on Peter's Island in the Schuylkill River, where aboriginal relics had been found. The thick undergrowth interfered with his examination of the interior of the island; but at one end, where the bank had been washed away by the river, he discovered arrow-heads and a large quantity of fragments of Indian pottery.

Mr. Culin exhibited flat plaster casts of a set of 32 gambling sticks used by the Haidah Indians of the Northwest Coast, made from the original sticks in the United States National Museum, Washington. They bear impressions of the characteristic designs with which such sticks are frequently ornamented, and are intended for the collection of games in the Museum of Archæology in the University of Pennsylvania.

General Gates P. Thruston, of Nashville, Tenn., a Corresponding Member of the Society, presented a copy of his recent book entitled *The Antiquities of Tennessee.* A vote of thanks to General Thruston was ordered, commending his work as a valuable and important contribution to American archæology.

NOVEMBER 5TH.

Mr. Culin read the following paper on

"TIP-CATS."

In a recent communication to the *Journal of American Folk-lore*[1] I described the familiar game of "cat," or "pussy," which is constantly played by the boys in our streets, and I there referred to the convincing proofs of its antiquity furnished by Mr. Flinders-Petrie. In his excavations at Kahun, in the Fayoom, Egypt (cir. 2500 B. C.), he discovered a number of "tip-cats," one of which, loaned to me by Mrs. Cornelius Stevenson, curator of the Egyptian Section of the Museum of the University, I have the pleasure to exhibit to you. The material of this object appears to be red cedar, probably hardened by the absorption of lime salts.

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[1] Vol. IV, p. 233.

I have inquired about the existence of the game we call "cat" in other countries, and am informed that in Hohshan, in the province of Kwantung, China, it is played by children.[1] The pointed object used there is similar to the one used here, and is called *t'ò tsz'*, or "little peach." It is struck with a stick, in the manner practised here. For all that I know to the contrary, the game may be played by Chinese children generally, and is not confined to Hohshan. In Japan, on the contrary, according to a detailed account, for which I am indebted to Mr. Motochica Tsuda, of Tokio, there is only one place in that country where the game is played, that being in the district near Kumamoto, a city in the southern island. The game is there called *in ten*, and is played with a small stick, called *ko*, "son," and another stick, called *oya*, "parent." The latter is usually a foot or a foot and a half long, and is used to strike the *ko*.

Two boys play, one against the other, or one boy may play two or more, or equal sides of two or more may be chosen. A small pit is dug, and the *ko* placed on the edge, so that its end projects. One boy then strikes the projecting end with the *oya*. His opponent throws it from where it falls toward the little hole, and the batter then measures the distance from the place it last fell into the hole. If the batter after knocking the *ko* makes but one strike at it in the air, this distance is measured with the *oya*. If he hits it twice while in the air, it is measured first with the *oya* and then with the *ko*, and so on, alternately; and, if he hits it four times, the distance is measured exclusively with the *ko*. Each measurement with the *oya* or *ko* counts a point to the batter's credit. If the *ko* falls a distance less than the length of the *oya* from the hole, the batter goes out, and his opponent takes his place, or if an opponent catches the *ko* while it is in the air, the batter, and those on his side, if he has partners, lose all they have already made, and one of the other side takes the *oya*. The number chosen for the score is usually 100, which constitutes "game."

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[1] F. Porter Smith, M. D., in an article on "Games of Chinese Children" (*The Phœnix*, No. 15, Sept., 1871) says: "*Ta-pang* is a game of 'cat' quite as dangerous to the eyes of bystanders in Chinese streets as in those of small English towns." *Ta-pang*—"to knock the stick."

It is Mr. Tsuda's opinion that, since the game is found in no other part of the empire than Kumamoto, it is probably of Corean origin. The place was the site of the castle of General Kato, who took an important part in the campaign against Corea, 300 years ago. He ravaged the country so that traditions of his career still remain there. Those who were only able to fight he killed. The weak and infirm he turned loose to starve, but the skillful artisans he sent prisoners to Japan, to Kumamoto. As a result, several of the Corean arts survive there, such as the manufacture of porcelain and the Corean *amé*, "vegetable honey." The game of *in ten* Mr. Tsuda regards as probably introduced by these involuntary Corean immigrants.

DECEMBER 3D.

President Brinton read a paper on the use of weights and scales among some American tribes. Singular as it seems, the sense of weight, or the attribute of ponderosity, was nowhere employed in North America to measure quantity. The nearest approach to it was by the load a man could carry; but this was nowhere in the area referred to reduced to a fixed amount, nor was any apparatus in the nature of a balance, or scales and weights, invented by the natives. The same is positively asserted of the partially civilized Chibchas of New Granada by the early writers.

It is therefore the more surprising that we find evidence, both archæological and linguistic, that the ancient nations of Peru, both the Aymaras, Kechuas, and probably the Yuncas of the coast, manufactured and employed scales and weights of considerable perfection, and constructed on the most correct principles. Several such had come to the knowledge of the speaker, which had been disinterred from ancient Peruvian graves. One is in the American department of the Britism Museum. The bar is about eight inches in length; to its extremities cords are attached, by which small cups or platforms are suspended. Evidently it was confined to the weighing of very small objects, probably gold. Two other specimens are in the possession of Professor Crawford of the Williamson school, near Philadelphia, also from Peru.

Turning to the evidence of language, we find that the Kechua and Aymara languages have a word in common for the balance, *huarcu;* from which are derived the terms *huarcuni aycani*, to measure by weight, and others. It is true that *huarcuni* means "to hang something;" *runa huarcuna*, "the man hanger" (*i. e.*, the gallows), in

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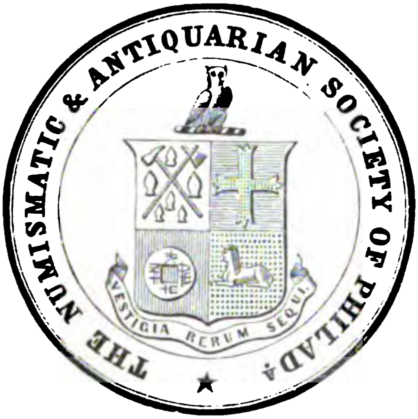

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PRINCIPAL CONTENTS.

PAGE

Officers and Committees for the Years 1892–99, ... 5–12

Resident Members, ... 13

Honorary Members, ... 15

Corresponding Members, ... 15

Donors to the Library, ... 18

Donors to the Cabinet, ... 22

The Popular Literature of the Chinese in the United States, . . 23

Tablet from the Grand Bazaar, Constantinople, ... 23

The Aborigines of North America Related to Those of Japan, . 24

The Intercontinental Trade of Bering Straits, ... 29

Indian Pits near Allentown, Pa., ... 34

Symbolism of the Iroquois, ... 36

Ramage's Miniature Portrait of Washington, ... 38

The Historico-American Exhibition at Madrid, ... 40

Carving Stone in Egypt and in America, ... 41

Antiquity of Man in America, ... 46

American Aboriginal Inscriptions, ... 48

Archæological Explorations in Asia Minor, ... 50

Ancient Mining in South Africa, ... 52

The Cross-Bow, ... 59

A Coin of Ancient Philadelphia, ... 76

Central American Objects, ... 77

Powhatan Indian Figures near Washington, D. C., ... 79

American Aboriginal Pottery, ... 80

Market Street Bridge Monument, Philadelphia, ... 81

Origin of the Japanese Race, ... 81

The Boro Budur Temple of Java, ... 83

Seacoast Submergence and Prehistoric Human Relics, ... 92

Recent Cave Explorations for Early Traces of Man, ... 95

Yucatan Cave Explorations, ... 96

Mayan Pottery, ... 100

PAGE

The Results of Recent Digging, 102
Prehistoric Metal Work, 105
Nuremberg Peace Pennies, 106
The So-called Copper Age, 108
An Emblematic Mound in Canada, 111
The Society's Diploma, World's Columbian Exposition, 112
Proposed Medal for the Philadelphia Post Office, 115
Degeneration of American Indians, 118
Corean Coins, 120
A Japanese Sword, 123
Bolivian Quipus, 125
Durham Furnace Stove Plates, 127
Indian Objects from New Brunswick, 130
Indian Banner Stones or Gorgets, 132
Peruvian Copper Axes, 132
Glacial Man in America, 135
Japanese Swords, 137
Japanese, Tartar, and American Bows, 147
Bolivian Prehistoric Copper Implement, 148
Bolivian Bola, 149
Bolivian Prehistoric Bronze Tomahawk, 150
Crowns, 150
European Museums, 152
Necrology, 155
    Thomas Hockley, 155
    Lewis Allaire Scott, 155
    Dr. William Samuel Waithman Ruschenberger, 156
    Dr. Robert H. Lamborn, 157
    John Sergeant Price, 158
Alphabetical Index, 161

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PROCEEDINGS.

1892.

JANUARY 7TH.

Mr. Culin read a paper entitled, "The Popular Literature of the Chinese in the United States," * illustrated by a collection of books purchased in the Chinese shops in Philadelphia and New York City. Mr. Culin exhibited a collection of Chinese coins and medals, the property of the Board of Foreign Missions of the Presbyterian Church, including a large number of irregularly shaped pieces; one, probably intended as an amulet, in the form of a small bell. The collection also comprised the usual types of "razor," "key," and "cloth" coins, and a set of eight medals, with representations and the names of the Eight Genii. Doubt was expressed as to the antiquity of many of the specimens; for the uniformity of the patina appeared to be the result of some artificial process rather than of age.

Mr. Harry Rogers exhibited a Japanese ivory carving in the form of a pipe case with a pendant box. It was composed of many pieces hinged upon a framework.

The committee on the collection of objects for the Madrid Exhibition in 1892 was continued. The Society also agreed to loan its collection of Peruvian idols to the Loan Exhibition of Religious Objects at the University Museum. Included in this collection is a mold for making clay idols from Chancay.

A letter from the Rev. Albert L. Long, of Robert College, Constantinople, a Corresponding Member of the Society, was read, in which he referred to a tablet from the Grand Bazaar, Constantinople, with an inscription in Greek characters, which was illustrated in the last report of the Society's Proceedings (for 1887-89) for the purpose of obtaining information about it. No one had been able to translate the inscription. Mr. Long said:

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*Published in *Oriental Studies*, by the Oriental Club of Philadelphia. Boston, 1894.

"I recognize an old acquaintance in the lithographed inscription on page 67 of the report. It has been known to me for some time. I knew very well the man who, I believe, made it. He is dead, poor fellow! but a good many specimens of his work still remain in the markets. I have seen some of them even in European museums. I had missed this stone from its accustomed place and had wondered what had become of it."

FEBRUARY 4TH, 1892.

Capt. R. S. Collum, Assistant Quartermaster, U. S. M. C., read a paper on "The Aborigines of North America, and Their Relation to the Aborigines of Japan."

(ABSTRACT.)

In favor of the Japanese origin of the American Indians there are arguments from the drift of ocean currents, island stepping-stones, physiognomy, and ethnic traits.

The ocean currents must have frequently carried boats and men northward from the Malay Archipelago along the shores of Japan; where the Ainos had spread southward from Sagalin and the continent, later to be driven back northward by conquerors from the mainland of Southern Asia, yet leaving behind Aino names of places and prehistoric relics of the Stone Age. Further northward, the Japanese ocean current—the *Kuro Shio*, or Black Brine—is known to have carried forty-nine junks to the neighborhood of the American, or even beyond to the Hawaiian shores, in the ninety-four years from 1782 to 1876. Dr. Brinton, in his excellent work, *The American Race*, has admitted that "it is not impossible that in recent centuries some junks may have drifted on the northwest coast;" though he does not think the fact offers any solution of the problem. The similarity of the fauna and flora of the two coasts is due, not to a former land connection, but to the Japan current.

Again, from Yesso to Kamchatka the Kurile Islands stretch like the ruins of a causeway, prolonged by the Aleutian Islands to Alaska. Among the wandering tribes of Siberia there are traditions of the departure of ancestors northeastward across the sea filled with ice.

Arguments from physiognomy are not wanting. Griffis found photographs of Colorado and Nebraska Indians to be mistaken by Japanese for pictures of their own countrymen. Retzius and Humboldt find "the Pacific Coast Indians related to the Mongols, and their skulls bear strong resemblance to the Mongol Kalmucks." Catlin found among the western Indians strongly marked traces of Mongolian origin. W. H. Seward declares the tribes of Alaska to be "manifestly of Mongol origin."

Similarities in the languages, customs, superstitions, and religions also bear witness to the single origin of the races of the two continents. In the Indian vocabularies unaltered Japanese words have been found. The sacred mask-dances and the worship of the sun and of the forces of nature are instances of a strong likeness between Japan and America. In the Aztec and Japanese zodiac, six of the elements agree in both. Phallic worship has been observed in Japan similar to that of the American Indians. The characteristic Japanese fox-myths have their parallel in those of the coyote on the American Pacific coast. Furthermore, the Indian totems and the Japanese badges have a striking resemblance. The manner of life in Alaska is similar to that of the aborigines of Japan; and the myths of the Alaska Indians resemble those of Japan. Dr. Sheldon Jackson pronounces the Alaskan tribes, in mental traits, artistic ideas, and methods of labor, singularly like the Mongolian Japanese. Dr. Robertson, in the last century, says the American Indians came from Tartary in Asia.

In the discussion following the reading of the paper, Dr. D. G. Brinton admitted the evidence presented by Captain Collum, but called attention to the fact of great differences of a linguistic character. He held that the chain of the Aleutian Islands could not have been stepping-stones to the American continent, because the most western of them were found unpopulated by early navigators, who also found evidences of the arts and customs of the American Indians on the eastern islands. Bering Strait, he admitted, could have been a highway of communication.

All actual evidence from tradition, language and arts confirms the opinion that the migration of tribes has been from time immemorial *from* America *into* Asia, and not in the reverse direction. The earliest navigators found Eskimo families dwelling on the shores of Asia; but no Siberian tribes in Alaska. The ascertained direction of Eskimo wanderings has always been from south to north and from east to west. Slaves and other objects of barter were conveyed across the straits to the American shore, which explains the presence of Asian manufactured objects and of an Asian physiognomy in some tribes of the northwest coast; but no trace of the Japanese or Aino or of any Ural-Altaic tongue has been reported in America on sufficient testimony to make the assertion worth combating.

Dr. Charles C. Abbott said that his careful study of the Delaware Valley led him to the conclusion that there had been a distinct progress among the aborigines of the Atlantic coast, beginning at a very low stage. At such a low stage it would seem impossible for people to have traveled across the continent, so that for the original peopling of the Atlantic coast we must look to Europe.

MARCH 3D, 1892.

President Daniel G. Brinton read a paper entitled, "Mediæval and Aboriginal Dramas," in which he contrasted the miracle plays of Europe with the plays of the American Indians.

Mr. Culin read a paper on "Old Chinese Graves in Philadelphia."

Mr. Culin exhibited several amulets from the collection of the Museum of Archæology of the University of Pennsylvania, recently presented by Mrs. John Harrison and collected by her in the East in 1889 and 1890. One,.a green stone talisman, purchased at Jaffa, bore an inscription in Arabic of Cufic type, reading "God is High." Another was a small metal hand stamped with a Hebrew inscription, worn on the forehead by Jewish boys in Cairo to keep off the evil eye. The inscription, as translated by Dr. Morris Jastrow, reads *Ben Pôrath Jôsêf;* "a young branch is Joseph" (Gen. xlix, 22). *Shaddai*, and "Jerusalem, the Holy City." This gave rise to a discussion in which the widespread use of the extended hand as a magical symbol was referred to. It extends across the entire continent of Asia, reaching to Japan, and reappears in America. Mr. Charles E. Dana spoke of the custom in Cairo, when a funeral passes, of putting out two fingers of one hand and crying, "You go first, and I'll follow after." Mr. Herbert Friedenwald stated that it was common to see the horses and donkeys in Cairo stamped with a red hand with henna. He stated also that the position of the hands in the dance of the Dervishes was an important characteristic.

Mr. Inman Horner exhibited an interesting collection of coins, loaned for the occasion by Dr. S. Emlen Meigs, comprising a twenty-shilling piece of Charles II, containing 1858 grains of silver, 925 fine; a siege piece of the city of Leyden, with the arms of the city and the motto, *Pugno Pro Patria,* and a siege piece of the same city struck in papier maché. Also, several restruck pieces, one of the Russian Mint.

Mr. Harry Rogers presented to the Society a set of the new silver and base coinage recently made by the Chinese Government at Canton.

APRIL 7TH, 1892.

The death of Thomas Hockley, Treasurer of the Society since 1888, was announced, March 12th, 1892, in his 54th year.

Mr. Inman Horner read the following paper on "The Intercontinental Trade of Bering Straits:"

THE INTER-CONTINENTAL TRADE OF BERING STRAITS.

By Inman Horner.

The immediate cause for reading this paper is my conversations with Lieutenant Miles C. Gorgas, U. S. N., who spent three years in Alaskan waters on the U. S. Steamer "Bear," and who was an eye-witness of the fairs and marts by which the commerce is carried on.

Nordenskjöld, in his famous trip along the north coast of Asia, gives ample testimony of how far-reaching this traffic was among the Chuckhis of Eastern Asia. He left Karlskrona on the 22d of June, 1878, in the "Vega," and passing into the Arctic seas, endeavored to coast along the Asiatic continent to Bering Straits. He was almost successful in the effort in one summer season, but, fortunately perhaps for science, he was compelled to pass a dreary winter within a few miles short of the Straits. The "Vega" was frozen in the ice near Koliuchin Bay, in 67° 4′ north latitude and 173° 23′ west from Greenwich, on September 29th, 1878; the distance from East Cape, the easternmost point of Asia, being 120 miles, and from Point Hope, the opposite American land, 180 miles.

The Swedish navigators made many sledge journeys and a careful examination of the natives. The Chuckchis had been first met on September 6th, near Bear Island, many miles further west. It was remarked that none of them could speak Russian, but that a boy could count in English up to ten, which Nordenskjöld puts down to the influence of American whalers. On September 7th Nordenskjöld encountered two large boat-loads of men, women, and children and began to barter with them. I quote him verbatim, page 332: "The Chuckchis wherever met were found using American tobacco and spirits, which last they called *ram* from the English word 'rum.' They have sail-cloth and guns made in America. During the winter, but especially in the spring, sledges drawn by dogs, traveling eastward to Bering Straits, were constantly stopping for a friendly visit to the 'Vega.' They were heavily laden with furs, principally reindeer skins, and were bound, the owners said, for the markets near Bering Straits." What I have cited, as well as the fact that the Chuckchis had no idea of money, refusing to accept silver coins unless they were bored for medals, shows how large a part barter played in the lives of this Asiatic polar race.

The "Vega" remained imbedded in the ice until June 18th, 1879, when with flags flying she steamed into the Straits dividing the old world and the new. On the 21st of July he visited Port Clarence, on the American side, and gives a lively and picturesque account of the harbor and scene there:

"The Chuckchis are otherwise shrewd and calculating men of business. They have been brought up to this from childhood through the barter they carry on between America and Siberia. Many a beaver-skin that comes to the market at Irbit (Siberia) belongs to an animal that has been caught in America, whose skin has been passed from hand to hand among the wild men of America until it finally reaches the Russian market. For this barter a sort of market is held on an island in Bering Straits. At the most remote markets in Polar America a beaver skin is said, some years ago, to have been occasionally exchanged for a leaf of tobacco."

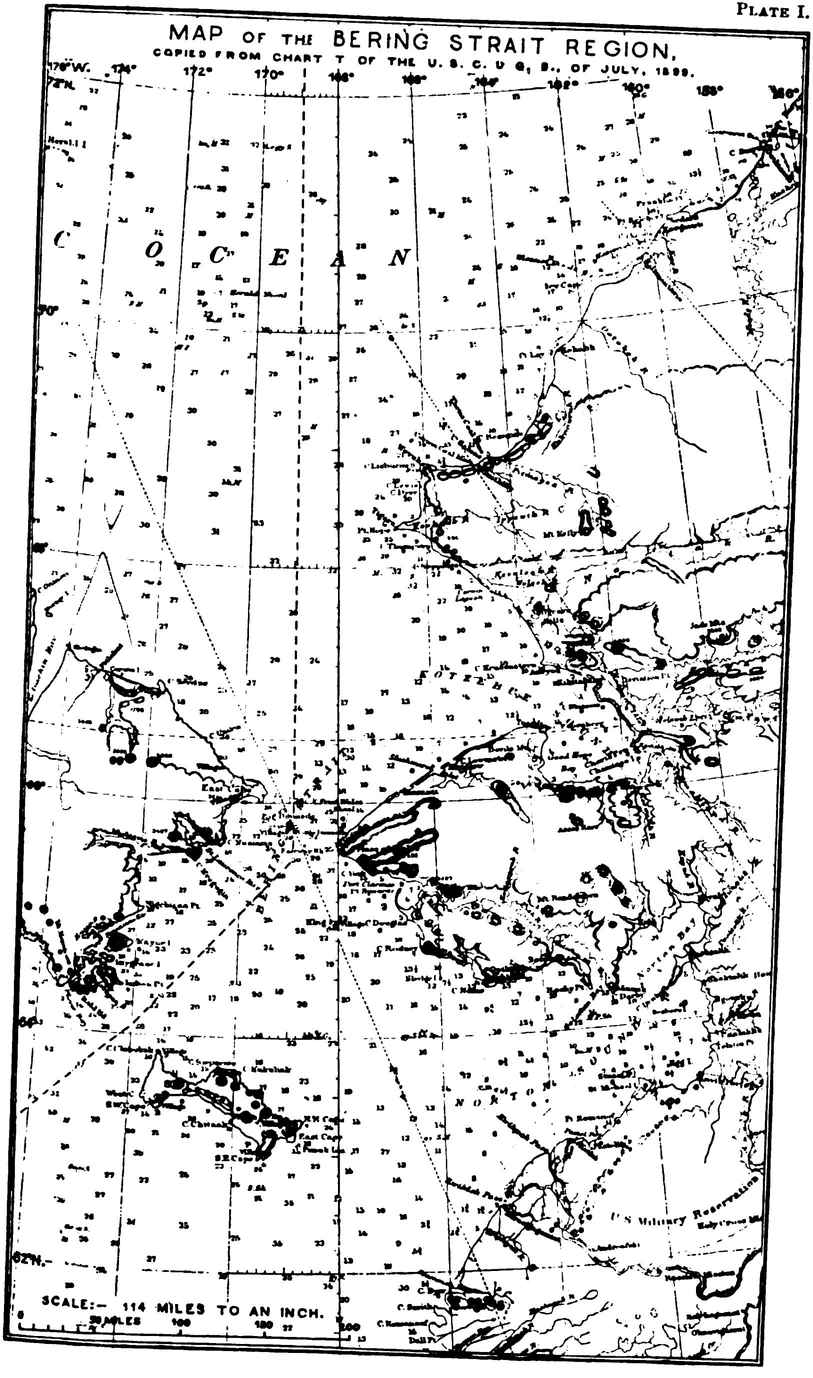
On page 487, he says: "According to von Dittmar, there exists, or still existed in 1856, a steady, slow but regular transport of goods along the whole north coast of Asia and America by which Russian goods were conveyed to the innermost parts of Polar America, and furs found their way to the bazaars of Moscow and St. Petersburg."

The inhabitants were almost altogether Eskimo, but there were a few Chuckchis. The natives lived in cotton cloth tents during the summer and had European clothes. They even had mats from the Sandwich Islands and all sorts of American guns and hardware. He saw a piece of nephrite which he thought must have been brought in a prehistoric stone age from Central Asia, pointing to the immense antiquity of the circumpolar trade.

The destination of the reindeer skins can be traced on the map of westernmost Alaska. They are carried across Bering Straits, a distance of less than fifty miles, to Port Clarence, where are assembled in June the inhabitants of that part of America; the American whaling ships, on their way to the fishing ground, having by that time landed tobacco, spirits, sail-cloth, cutlery, etc. This is the earliest of the great annual gatherings of the traders of the Peninsula.

There appear to be four annual fairs held in the extreme north-

PLATE I.


MAP OF THE BERING STRAIT REGION,
COPIED FROM CHART T OF THE U. S. C. & G. S., OF JULY, 1898.
176° W.
174°
172°
170°
168°
166°
164°
162°
160°
158°
156°
72° N.
70°
62° N.
O C E A N
SCALE:– 114 MILES TO AN INCH.
0
50 MILES
100
150
200
U. S. Military Reservation

western part of Alaska, that is, at or near Bering Straits, or on the north shore, between the straits and the mouth of the Mackenzie River. Beginning at the southernmost, a fair is held in June at Port Clarence,. just south of the narrowest part of the Straits. It is attended by the inhabitants of St. Lawrence Island, south of the Straits; by Siberians of the Chuckchi tribe, and by Indians from Cape Prince of Wales, the westernmost land of North America. They make their way from these different islands and capes of the two continents in their large, open boats, called *oomiaks*, and come in families, men, women and children. Their boats are drawn up on the beach and their camp is made under the lee of the boat turned on its side, with a skin, or, at present, cotton duck, for additional shelter.

The object of the fair is to procure from the whalers flour, tobacco, cotton duck for tents, powder and whisky. The Siberians bring the skins of reindeer, and the Americans furs, for barter. They wait for the whalers, who appear as soon as the ice breaks, on their way up to the cruising grounds. They live on blubber. Each man trades for himself, and each tribe keeps its own quarters in the camp, apart from the others.

Proceeding northward through Bering Strait, we find at Hotham Inlet, on Kotzebue Sound, the largest fair. The annual attendance here is computed at 1,500 men, women, and children. It lasts through July and August. The people live under the shelter of tents, as well as under that of their boats. The Siberians are not very numerous here, but there are large bodies of Indians from the interior. Those who have spent June at the Port Clarence Fair arrive at Kotzebue to trade off the Siberian products obtained by barter. They also bring with them flour and cotton duck obtained from the whalers, who seldom do any trading inside the Straits. The Point Hope Indians, on the north shore, attend this fair in large numbers. The principal traders of the whole region are the Prince of Wales Indians, who carry the skins of the Siberians and the supplies to the Kotzebue Sound fair. The skins of tame reindeer, which are much prized as clothing, are passed thus from Bering Straits. Other articles in use all along the north coast which are distributed by these intertribal fairs, are waterproof boots, for hard work, made of seal skin by the St. Lawrence Indians, and dry boots, so called, made with many ornaments, which are highly valued by Indian dandies.

There are also fairs at Point Lay, or Kokolik, between Point

Hope and Point Barrow, and at Camden Bay, 450 miles east of Point Barrow, and half way to the mouth of the Mackenzie. The one at Point Lay is attended by the Point Hope men.

The appearance of the fair at Hotham Inlet may be described as follows: It is a land-locked bay, with a shingle and sand beach. On the beach, just where the short grass shows itself, there is a confused array of tents made of cotton duck, others of reindeer skin, and others of scantling and driftwood, and of *oomiaks* lying on their sides, with a flap of duck or skin. On the beach, near the water, are the *kayaks*. Near each tent are the Eskimo dogs, six or seven of which have been used in tracking the boats in summer and the sleds in winter. The people are dressed in all kinds of garments, from reindeer furs to red flannel underclothes. Their receptacle for furs is the whole skin of a hair seal, with a slit in the stomach, serving as a trunk. The Indians are coming and going all the time. This is the great business mart of all the northwest coast, where the Indians exchange their own products for the necessaries or luxuries made by their neighbors, either of Asia or America, or brought by whalers. All exchanges are made by barter, as they have nothing like money, or even a standard, as skins or cattle, wampum or cowries.

This commerce has in all probability been carried on for generations. We can hardly estimate for how long. The whalers have to some extent changed the character of the goods dealt in, but did not originate the meeting of the traders at these northern harbors. Long before sails appeared in Bering Sea, Asiatics and Americans were meeting to barter peacefully the products of one continent for the products of the other.

President Brinton, in commenting upon this paper, said that it was an important contribution to science, and that while the existence of one fair had been known, the information as to the others was entirely new. Mr. Horner exhibited a collection of Eskimo objects, collected by Lieutenant Gorgas.*

A highly important collection of Alaskan objects,† collected by Mr. Joseph G. Rosengarten, was also exhibited. Many of them were of a symbolic or religious character, including a ceremonial arrow, wrapped with porcupine quills, with a stone point, a drum used in dances, and three charms suspended by cords, one of which was a crescent-shaped stone, bearing upon one side a fish inscribed in red, and on the other a Greek cross surrounded with seven dots, overarched with two curved lines. These devices were regarded as representing the four directions, the stars of the Great Bear and the firmament. Another object, representing a raven holding a mask before its breast, was of peculiar interest, as, according to President Brinton, it represented the great bird, a raven or crow, to which, in the myths of most of the northwest coast tribes, was attributed the creation of the world. "The dark storm clouds are spoken of as the shadows of its wings and the thunder as the noise of their flapping. This demiurgic bird is still the mystic source of life. The present specimen shows it holding in its hands a mask; in other words, the head of a person who is masked for the sacred ceremony, and it is vitalizing him, as in the act of brooding. It is remarkable that precisely the same symbolism is the explanation of the 'winged globe,' so frequent on Egyptian monuments."

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*This collection has since been deposited in the Archæological Museum of the University of Pennsylvania.

†Now in the Museum of Archæology of the University of Pennsylvania.

Mr. Harry Rogers was elected Treasurer, to fill the unexpired term of the deceased Treasurer.

MAY 5TH, 1892.

Mr. Inman Horner exhibited an additional series of objects collected in Alaska by Lieutenant Miles C. Gorgas, U. S. N. It comprised two bows reinforced with sinew, bone-tipped arrows, a harpoon with detachable bone point, and a set of Indian gambling sticks.

Mr. Culin read a paper on "The Romantic Literature of the Chinese in the United States."

JULY 7TH, 1892.

Mr. Culin was appointed delegate of the Society to the Historico-American Exposition at Madrid and the Congress of Americanists at Huelva, Spain. He was authorized to take with him to the Madrid Exhibition a collection of the Society's medals and paper money.

October 6th, 1892.

Mr. Lyman was requested to act as Recording Secretary during Mr. Culin's absence at the Madrid Exhibition.

The death of Sir Daniel Wilson, Corresponding Member, August 7th, was announced.

The President, Dr. D. G. Brinton, spoke of the group of fifty or sixty so-called Indian pits, aboriginal quarries of black chert and jasper, in the Durham and Reading Hills, near Vera Cruz, ten or fifteen miles southwesterly from Allentown; and of a like group, twice as numerous, a mile and a half from Macungie, on the East Pennsylvania Railroad, in Lehigh County, and eight miles southwesterly from Allentown.

The pits near Vera Cruz surpass in extent those of Flint Ridge, Licking County, Ohio, and are thirty or forty feet in diameter and from five to fifteen feet deep, and a number are one hundred feet long by twenty feet wide and about fifteen feet deep. They were dug by the aborigines for black chert and jasper to be made into arrow-heads; and follow well-marked jasper veins, supposed to be in or near the Laurentian gneiss, and running about north and south, at right angles with the general trend of the hills. The jasper is in nodules about two feet in diameter; and was broken at first by fire or by blows. Some specimens are rosy jasper and some yellowish. The material was thrown as refuse to the side of the pit, or was carried to a distant point and worked. The fact that there are no mounds around the pit to compare with the extent of the excavations shows that large quantities of material were carried away. One work-shop site was found at a quarter or half a mile from the pits; and many chips and "rejects" were found there, and one small broken but well formed pebble hammer about an inch and a half in diameter, of diorite, or like stone, not of the quarry material. Not a single arrow-head, however, was found, except one of quartzite brought from elsewhere. A mile from the work-shop was found a village site with hearths and flint chips.

Five specimens of "rejects" from two of the quarries were exhibited; and all show that they were vitiated by a roundish hump or bulge on one side, making it impossible to complete a good arrow-head from them. They closely resemble all the so-called paleolithic implements of America, and even those of Europe. It is argued by Mr. W. H. Holmes that all American so-called paleoliths are simply such rejects of a skilled manufacture, and that they do not necessarily indicate a stage of culture inferior to that of the most advanced stone age. It is hoped that further examination of these quarries will throw more light on this interesting question.

The President had visited the Vera Cruz pits this day in company with Mr. H. C. Mercer, of Doylestown, and Mr. Charlemagne Tower, Jr., President of the Board of Managers of the Archæological and Palæontological Department of the University of Pennsylvania. It had been decided to make further investigation by surveying and digging. Mr. Mercer, during an exploration authorized by that Board, discovered the group of pits near Macungie, and then was told of the other group.

In answer to inquiries, President Brinton said that black chert arrow-heads were found on the Susquehanna, but none on the Delaware. The Algonquins on the Delaware used jasper and quartzite for arrow-heads, but apparently not the black chert. Arrow-making was not a special trade among the Indians, but an accomplishment of every man; yet some few in a tribe were particularly expert.

Dr. R. H. Lamborn exhibited a finely-wrought copper turtle, unusually large, about three inches in diameter, found in digging a post-hole for the foundation of a house at Casa Grande, Chihuahua, Mexico. It had been sold by a boarding-house keeper to a dealer in Boston, who communicated it to Mr. Geo. F. Kunz, of Tiffany & Co.'s, New York. It appears as if formed of wires wound in various directions and soldered together; but, on testing, it proves to have no solder. The appearance is the result of traditionary conventionalism that persisted even after casting had been invented. A model was made with a wire, and a wax mold formed therefrom. It is said that the method of making such objects is described in Sahagun's unpublished *History of Mexico,* written in Nahuatl, in twelve books, of which President Brinton exhibited a manuscript copy of the first book at our meeting of December 4th, 1890. Dr. Gill, the zoölogist, says the copper turtle resembles the Mexican fresh-water terrapins.

Dr. Lamborn also exhibited a copper terrapin about three-quarters of an inch long, from the Chiriqui Coast, sent by Mrs. Zelia Nuttall from Europe. It is a solid casting.

He estimated the age of these objects to be perhaps five hundred to one thousand years.

President Brinton spoke of the method of making ornaments of gold wire by the Indians of Colombia, South America.

A bronze medal given by the Wyoming Historical and Geological Society, in commemoration of the Wyoming massacre, and a bronze medal, the gift of Dr. Samuel A. Green, Corresponding Member, and the same medal as the one received by meritorious students at the South from the Peabody Education Fund, were both examined with much interest.

The Publication Committee reported the completion of the publication of the Proceedings of the Society for 1890-91.

NOVEMBER 3D, 1892.

The deaths of Messrs. William Herbage, September 19th, 1891: Attilio Portioli, October 21st, 1891, and Jeremiah Colburn, December 30th, 1891, were announced, all Corresponding Members.

The president, Dr. D. G. Brinton, spoke on the "Symbolism of the Iroquois:"

He regretted that he could not make his communication in perfectly scientific form, on account of a promise of secrecy that had been exacted by the lady who gave him the information. He hoped, however, the injunction of secrecy would be removed before next spring. Last winter he had met two Iroquois, a brother and sister, with whom he had talked of his publication of Algonquin symbols. They then showed him some Iroquois symbols. The symbolism is aided by a rough script of the same source and of much the same character as the Algonquin script. There is a secret society among the pagan Iroquois that uses and preserves these symbols and script.

One record was a stick about four feet long, like a broom stick split in two, upon the flat surface of which was written the record or history of an important personage after his death. It begins with reciting that all the Six Nations (originally Five, as the Tuscaroras are not fully acknowledged to belong to them) have come together to celebrate the funeral of a deceased brother. The latter half of the record, in a different strain, accompanied the soul of the deceased after departure from the body, the first few days, and so on, until finally its arrival at its ultimate destination. Dr. Brinton had urged his informants to have all this record, that corresponds so closely with the Egyptian Book of the Dead, written out in full in the Iroquois language. They promised that the recommendation should be brought before the annual meeting, and it will probably be sanctioned.

Each man has a badge indicating his degree of initiation in the society. The badge is worn on his body, and is now made of metal, but was originally of shell or wood. Every mark on the badge has a definite meaning. Several exhibited were all of the lowest degree. One was shown to Dr. Brinton that was of the third degree, a gorget. It could not even be lent to him, but he made a sketch of it from memory. Anybody who understands the badges of the highest degree understands all. This badge of the third degree has two hearts superposed, the lower one reversed. The two hearts represent the dual reciprocal principles of nature; and the fundamental idea is evolution from sexual conjunction. One part of the marking of the badge is a conventional representation of the male organ; another part shows the two mammæ of the woman, with an open space representing the female organ.

It is, however, not to be supposed that the Iroquois use such emblems out of gross and lascivious feelings and habits. On the contrary, the Iroquois are extremely chaste, excelling all other Indians in that respect. Indeed, their delicacy in regard to these symbols is so great that no woman not yet past the age of childbearing is allowed to belong to this secret order. Furthermore, one of the principal sacred rites of the Iroquois is the sacrifice of a white dog by a young man of about twenty years of age who must be of virgin purity.

Dr. Brinton pointed out a remarkable coincidence between the form of the badge he had sketched and a figure given in the *Zeitschrift für Ethnologie*, Part III, 1892, representing symbols of precisely the same character, in a carved wooden charm for "house protection," in the Kêi Islands. These symbols of aboriginal worship and of the dual principles are there superimposed upon Hindoo and Mohammedan symbols or words. The coincidence is perfect, showing how the same ideas find closely similar expression in widely separated and totally disconnected portions of the human race.

Mr. Westcott Bailey spoke of a similar symbol, called the "Shakespeare heart," incurved; also called the "Mary Stuart brooch," with a bow-knot over the heart.

Dr. R. H. Lamborn exhibited an ancient ring, of about the first century of our era, dug up within a few years among the Roman ruins. It is set with a paste gem resembling garnet, and representing the head of Medusa. Though bought for genuine, it was found on testing to be of paste, yet a very hard paste that will cut glass. The garnet paste is probably a silicate of alumina colored by cassius. Paste gems were seldom polished on the interior of a ring, and roughness of the interior is the first ground for the suspicion that it is paste. The setting is antique; not of solid gold, but bronze gilded.

Mr. Abbott exhibited a coin of the Emperor Valentinian II, of Constantinople.

DECEMBER 1ST, 1892.

Mr. Francis Jordan, Jr., Vice-President of the Society, read a paper on his investigations near Betterton, Md., and exhibited a large number of Indian relics, stone arrow-heads, hammers, and other objects and fragments of pottery; all, however, only a small part of what he had found and brought away from the Still Pond Creek shell heap.

Mr. Chas. Henry Hart spoke of a newly-discovered original miniature portrait of Washington by John Ramage, referred to in Washington's diary under the date of October 3d, 1789. Mr. Hart had already, in an article in the *Century Magazine*, May, 1890, spoken of the Ramage full-face portrait belonging to Mrs. Moses S. Beach, of Peekskill, who obtained it in Montreal from a lady who said the artist had given it to her father.* A month ago, however, a gentleman from Virgina brought Mr. Hart a three-quarters to left miniature of Washington that is also evidently by Ramage, and appears to be the genuine portrait mentioned in the diary as painted "for Mrs. Washington." It was given by Mrs. Washington to her sister-in-law, Betty Washington (Mrs. Lewis), and by her to her granddaughter, Mrs Otwayanna Carter, wife of Dr. William Owen, of Lynchburg, Va., and she gave it to Mrs. Stabler, Dr. Owen's niece and adopted daughter, the mother of the gentleman who brought it. Mr. Hart exhibited a photograph of it one-third larger than the original, and pointed out that it was somewhat like the Savage picture. The Houston engraving for Condie's *Philadelphia Monthly Magazine* for May,

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*See also *McClure's Magazine*, for February, 1897, Vol. VIII, p. 298.

1798, is evidently from the genuine Ramage portrait, and not, as had formerly been supposed, a bad copy of the Savage picture.

On further discussion, Mr. Hart said that Mr. John Ramage was an Irishman who came to Boston just before the Revolution began, and was appointed Second Lieutenant, and after the war broke out went to Halifax with other loyalists. He afterwards came to New York, and became Second Lieutenant in a loyalist company there. He painted miniatures, and was gay in society. He fell into financial difficulties through endorsing the notes of friends. He removed to Canada in 1794, and there he painted portraits again. He died there October 24th, 1802, and was buried in the Protestant cemetery, now Dufferin Square. He made a claim for land bounties from the British Government and received something. His son lives at Orange, N. J., and has several relics of his father's furniture.

Mr. Maxwell Sommerville, reminded by the frame of the Ramage miniature, spoke of a certain onyx portrait in his collection with a somewhat similar soft gold frame, dating from 1492.

Mr. Sommerville spoke also of a stone resembling the foot and ankle of a lame man, a natural boulder found in the sea near Cape Hatteras.*

Mr. Sommerville exhibited a Christian ring of virgin gold, supposed to be of the third century, with a cross, and the embodiment of simplicity. It had been obtained by Mr. Sommerville from the curé of Afragola, near Cuma, now of Pozzuoli.

Mr. F. D. Langenheim spoke of a shinplaster of 1814.

Mr. Cornelius Stevenson, on the part of Dr. R. H. Lamborn, presented a box of seventeen medals and badges, including the Columbian Exhibition Medal, and mostly souvenirs of the four hundredth anniversary of Columbus's discovery of America.

Mr. Stewart Culin, the Recording Secretary, was authorized to send the Society's display of American paper money, now at Madrid, to the Chicago World's Fair of next year, with their present mounting.

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*Such natural stones are frequently found in American archæological collections, and designated as "lasts for moccasins."—S. C.

1893.

JANUARY 5TH.

The death of Mr. Alfred G. Baker, a Resident Member, was announced, December 20th, 1892.

The President, Dr. D. G. Brinton, spoke of the Historico-American Exhibition at Madrid, which he had just visited as United States Commissioner. The Exhibition was intended to illustrate the condition of America at about the time of its discovery; and there was another exhibition at the same time to show the condition of Europe from the middle of the 15th to the middle of the 18th century. Almost every country was invited by Spain to send ethnological collections to the Exhibition, and nearly every American government responded, except Canada. The United States government sent a collection; and so did the National Museum, the Peabody Institute, the Academy of Natural Sciences, and our Society. This Society's collection was well placed and well displayed, and attracted much attention. There was an exceedingly good collection from Costa Rica, and it was the first time it had ever been displayed. There were also collections from South America. Altogether, the Historico-American Exhibition filled thirty large rooms. But the season was not propitious. The building was new, not well heated nor well lighted. The weather was very cold at night. The collections will, in large measure, be carried to the Chicago World's Fair, but not all of them. They formed a very excellent series, illustrating American ethnology and history. There were also the collections of the European Exhibition to illustrate the state of civilization of Europe at the time of the discovery of America. The Spanish Government has been liberal in regard to these exhibitions. The exhibitions were originally intended to be closed with the end of December; but, after all, are now to continue through the month of January. Our Philadelphia collections, however, will be packed up and brought back this month, in accordance with the original plan, as the American delegates had no authority to extend the time. The time for exhibiting the other collections was extended one month at almost the last moment.

Mr. F. D. Langenheim spoke of a six-dollar Brunswick silver coin.

In compliance with the American Philosophical Society's invitation to send a delegate to that Society's celebration of its one hundred and fiftieth anniversary, next May, Vice-President Jordan was by vote appointed delegate to represent our Society; President Brinton having declined such an appointment, on account of being one of the American Philosophical Society's Committee for that celebration.

FEBRUARY 2D, 1893.

Mr. John T. Morris exhibited a stone, three or four inches across and perhaps half an inch thick, that he had picked up at the tombs of Assasseef, at Thebes, and had painted upon with water colors. The water had immediately sunk into the fine, slightly yellowish nummulitic limestone, leaving the very brilliant colors upon the surface. For comparison, a piece of exactly similar stone with ancient colors at the bottom of sharply-cut grooves was likewise exhibited, showing precisely the same effect and that the ancient colors had no doubt been applied in the same way.

The President, Dr. D. G. Brinton, spoke of some points suggested by the piece of ancient Egyptian carved stone that had just been exhibited. Mr. Jos. D. McGuire, of the National Museum at Washington, had lately shown Dr. Brinton some results of his researches as to primitive methods of carving stone and their bearings on old Egyptian work as well as on the work of the American aborigines. In Egypt, there were two entirely different processes. In the old dynasties, from the third or fourth to the twelfth, hard granite was finely wrought; but in the later dynasties, say the eighteenth or nineteenth, or later ones, limestone was worked. The occasion of the change of material was the discovery of the use of metals, that led to the use of softer stones. The hard stones of the earlier dynasties were carved with stone chisels. The stone chisel of the same material as the statue is worked by percussion, as shown in ancient pictures of workmen at work, striking one chisel with another. The cutting chisel wears away only half as much as the stone that is carved; so that a groove can be cut or a surface polished with a stone chisel of the same material. Hence, the age of Egyptian works of art can be defined by the material. With the older, harder materials, the limbs of a statue are joined to the main body; and the arms, for example, or the hair is cut according to the requirements of the material and tools, and not necessarily in the fashion of the living subject. The statues of the third, fourth and fifth dynasties are not of soft stones. The present specimen, with its somewhat undercut grooves, was evidently made with a metallic chisel; and Dr. Brinton was confident from that fact alone that it belonged to one of the later dynasties.

Mr. Franklin Platt asked if gems were not used for cutting stones in Egypt.

President Brinton answered that Flinders-Petrie had claimed that the ancient Egyptians used saws of hard gems. But Mr. McGuire declared that every cut instanced by Petrie could be explained by a saw, so to speak, of a single tooth, such as Dr. Brinton had himself seen. But Dr. Brinton did not feel competent to decide the question.

Mr. Morris said he saw near Memphis, in a small room, a priest's tomb, 4,500 years old, the picture of a man making a chair, and sawing wood with a hand-saw. The temple was one of the oldest buildings in Egypt, but was in perfect condition in 1882.

Vice-President Jordan inquired whether the stone of the Pyramids was worked in the method indicated by Mr. McGuire.

President Brinton said that Mr. McGuire declared it was worked in exactly the same method. Mr. McGuire had in sixty-four hours made an axe of American jade, and had imitated old American work. For example, he closely copied a Mexican calendar in similar stone, in twelve to fifteen hours, with merely stone implements. Indeed, considering the little time required, it seemed now surprising that we do not find more such old works of art.

In answer to Mr. Milne's inquiry as to American jade, President Brinton said that it was found in the Tehuantepec Isthmus, in the north of British Columbia and in Alaska. There is said to be a mountain of jade in Alaska, in a very inhospitable region, midway between the Yukon River and the Arctic Ocean, but the precise situation is not known within fifty or sixty miles, except that it is well known to the Indians. The locality is less worked now than formerly. American jade is not the same as the Chinese. The best of the so-called Chinese jade, however, comes from Burma. The appearance is different in jade from different places. Prof. F. W. Putnam believes that South American jade comes from China. But it is temerity to say by the color whence the jade comes.

A member mentioned that a Chinaman in Hongkong, wishing to sell a small jade ornament to an American tourist, yet refused to bore a hole through it, and so the purchase fell through.

Mr. Maxwell Sommerville explained that the dust from cutting jade forms a thick paste that hinders the cutting, so that jade-cutting is not liked.

President Brinton added, in answer to Mr. Platt, that the jade of Burma did not come from the ruby locality, and that the jade mines were let by the government for £60,000 a year, and the amount of jade to be taken out was limited.

Mr. Bailey said that the Chinese bored even diamonds.

President Brinton said that Mr. McGuire had also studied aboriginal drilling, and had found that he could get 320 revolutions a minute with simple apparatus. That enabled him to bore rock crystals and diorite, and especially fast when water was thrown in. Mr. McGuire fastened the aboriginal stone drill to the end of a small shaft. The point was maintained remarkably well.

Mr. Bailey described the method by which a certain jade bracelet, bought of a Chinaman in San Francisco, was forced over the hand upon a lady's wrist, so that it was seemingly impossible that it could fall off. Yet one day, in Washington, D. C., it did fall off and broke on a stone floor. She said that something must have happened to Mr. ——; and it turned out that he had that day committed suicide at San Francisco.

President Brinton spoke of the fluted stone axes from Northern Wisconsin and from Western Africa; and said he had lately seen at the Madrid Exhibition closely similar fluted axes from Uruguay. It was an instance of identical methods quite independently invented and used in widely distant parts of the world.

Mr. Sommerville exhibited a coin from Jerusalem, a "widow's mite," obtained from Mr. Sears Merrill, the U. S. Consul there, so long the American representative and so much liked. The coin was one of John Hyrcanus, 135-106 B. C., bearing cornucopiæ and an old Hebrew letter, and was very well preserved and fresh looking.

Mr. Morris exhibited a long curved sword that a German brought some years ago to a certain works in this city to be cut up into carving knives. But new steel was used instead, and the old rusty sword was thrown aside and neglected. After some years, when a sword was wanted for some amateur theatricals, it was looked up again, and on examination proved to be very handsomely etched, with the names of several campaigns in English: "Peninsula; Egypt; Waterloo; XI L. D." (11th Light Dragoons).

MARCH 2D, 1893.

Mr. Culin resumed his duties as Recording Secretary.

The President, Dr. D. G. Brinton, read a paper on "The Aubin Collection of Mexicana," in which he stated that this remarkable collection of documents relating to the early history of Mexico was about to be made accessible to scholars by being placed in the National Library at Paris.

Mr. Maxwell Sommerville, at the special invitation of the Society, exhibited and described a collection of amulets and talismans recently acquired by him. Among them was a series of Persian talismans, one in the form of a small iron horseshoe with Arabic inscriptions. The talisman was consulted in times of danger by being placed among hot embers, and the answer was inferred from the characters that the fire made most prominent or distinct. The Arabic talismans of fine gold exhibited were of great beauty. They bear the usual Mohammedan formulæ, and one, a talismanic ring, had the names of the four archangels inscribed on a central tablet. A metal plaque, with two sets of metal dice, was also used in a kind of divination.*

Mr. Sommerville also exhibited a small wooden image, such as are usually described as idols, from the Congo. A piece of mirror set in its breast was explained by him as due to the belief among the natives of the Congo that the monsters or spirits against which the object was used as a protection could not bear to see their own hideous visages, and hence the potency of the charm.

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*See Report, U. S. National Museum, for 1896, pp. 825, 826.

Mr. Culin exhibited a copy in water colors of a sheet of playing cards now in the archives of the Indies, at Seville, Spain. They were made in Mexico in 1583. Their reverses, of which a photograph was shown, are ornamented with pictures of Mexican gods and historical personages. These cards will form part of the exhibit of games to be displayed by the Museum of Archæology of the University of Pennsylvania at the Columbian Exposition at Chicago.

The question was raised as to whether the cards were made in Mexico or in Spain. President Brinton said they were undoubtedly made in Mexico. Their engraving was characteristic of Mexico, where a school of wood-engraving existed as early as 1550, of which he had many illustrations in his own library.

Mr. Westcott Bailey exhibited a silver medal of Arnold Winkelried, struck in commemoration of the National Schützenfest in Nidwalden in 1861.

Mr. Culin, who represented the Society at the Historico-American Exhibition at Madrid, reported that its collections of American paper money and medals had been exhibited in connection with those of the United States National Museum at Washington, and had attracted much attention. An award of a silver medal was made to the Society for its exhibit by the Spanish Government. The collection consisted of Colonial and Continental paper money, State bank notes, private notes and postal currency, and medals of Washington, Franklin, and other eminent Americans. The combined collection of American paper money of the United States National Museum, the Antiquarian Society, and the Bureau of Engraving and Printing, displayed at Madrid is said to be the best ever made, and presented a striking exposition of the financial history of our Republic.

Mr. Charles Eyre, of Florence, Italy, presented to the Society an ancient florin from the walls of Florence. This interesting coin was obtained by Mr. Eyre some years ago when the ancient walls of the city were torn down. It fell from the ruins and was obtained by Mr. Eyre from a workman.

Mr. Culin presented an uncirculated Spanish dollar of the year 1776. It was one of twenty similar pieces paid into the Madrid office of the Equitable Life Insurance Company of New York by one of its policy holders.

MARCH 24TH, 1893.

A project for a change of quarters for the Society was discussed at a special meeting, but final decision was postponed.

APRIL 6TH, 1893.

Professor Maxwell Sommerville read a paper on "Phallic Emblems," which he illustrated with an interesting series of objects from his private collection, some of them antique bronzes.

Mr. Stewart Culin read a paper entitled, "A Day at Perugia," * in which he gave an account of Prof. Bellucci's collection of amulets.

Mr. Francis C. Macauley presented a coin of the Duke of Burgundy; and Mr. Culin, the Columbus medals of Genoa and Barcelona.

MAY 4TH, 1893.

Mr. Lyman was requested to act as Recording Secretary during Mr. Culin's absence at the Chicago World's Fair.

The death was announced of Hippolite Taine, Corresponding Member, on March 5th, 1893; and of Right Rev. Wm. Ingraham Kip, Honorary Vice-President for California, April 6th, 1893.

Mr. W. Bailey spoke of an 1804 dollar, of which Mr. Brick, collector, of Arch Street, above Eighteenth, had said that he would not sell it for $1,500, and that he had refused $1,000 for it. It had belonged to Mr. Brick's grandfather.

The President, Dr. D. G. Brinton, spoke of the antiquity of man in America, as indicated by any implements used by him, and called it at present a very burning question. The matter had been brought up in connection with the so-called paleolithic implements that Dr. C. C. Abbott had described at one of our meetings, some years ago, as occurring in the Trenton (N. J.) gravel. Dr. Abbott's position has been criticized, but he still maintains that man existed at Trenton when the great glacier came within sixty miles of that city. On the other hand, the Bureau of Ethnology at Washington insists that man did not

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*Published in Putnam's *Historical Magazine*, October-November, 1893.

live hereabouts when the glacier was there; and doubts whether any human race existed in America previous to the recent Indian ones; and declares that there is at least no proof of such a fact, though not denying its possibility. The matter has now become almost a personal one. Prof. F. W. Putnam, of the Peabody Museum, Cambridge, sides with Dr. Abbott. But there is an extreme difference of opinion between men who have made a specialty of such matters for many years. Hence, we must not decide too hastily; and Dr. Brinton's own opinion is that the question is still an open one: that there is no proof yet that man existed during the glacial period, though no proof to the contrary. For the past six months it has been the great question in Americanism; not only a personal one, but, unhappily, a local one. South of Philadelphia there are no believers in the existence of man during the glacial period; all the believers in glacial man are north of Philadelphia. Dr. Brinton had previously exhibited supposed paleolithic implements; the Washington men, however, say that they are not paleolithic implements but only rejects, incomplete attempts at implements. The question is not yet at all settled. But without reference to tools, for indirect physiological reasons, man must have existed here very long ago.

The bronze medal of the Columbian celebration in Spain was announced as received from the Spanish Government within the past few days, and was exhibited to the meeting. On motion of Mr. Milne, the President was requested to write a suitable acknowledgment of the medal, with appreciation of the praiseworthy part the Spanish Government had taken in the celebration of Columbus's discovery.

Mr. Bailey spoke of a very fine Columbus medal that had been struck in Milan, Italy, and offered for sale.

Mr. F. D. Langenheim, Curator of Numismatics, exhibited two Columbian medals, one of the Gorham Manufacturing Company.

Mr. Milne inquired if there were a catalogue of the coins and medals belonging to the Society. President Brinton answered that one had been made.

OCTOBER 5TH, 1893.

The death was announced of Mr. Anthony J. Drexel, June 30th, 1893; and of Mr. Samuel Baugh, at the age of over 82 years, August 27th, 1893; both Resident Members.

The President, Dr. D. G. Brinton, spoke of the alleged aboriginal inscriptions found in the eastern United States; and in particular of a certain piece of slate from eastern Long Island, inscribed on both sides, of which a plaster cast had been sent to him for examination. The inscription on one side was too indistinct to be traced; the other was traced, and exhibited a supposed pictograph. A number of inscribed tablets had been found in the Mississippi Valley, at Davenport, Cincinnati, and elsewhere. There were also the Lenape stone, described in Mr. Henry C. Mercer's book; and the inscribed shell of Claymont, Delaware; both with the picture of a mastodon.

Hitherto no criterion had been laid down for judging properly of such inscriptions, and various opinions have been held about them. Now there is such a criterion; for certain tribes did have a method of writing that is seen to be governed by definite principles. The characters used were: 1st, A true picture of an object; for example, a deer, a man, a wolf. 2d, Symbolic writing, such as the paw of a wolf, the three toes of a turkey; taking only a part of the whole within the original concept. 3d, Emblematic writing; taking something in the animal, and a part for the whole, but only in an allusive way; as, for instance, a medicine man is represented by a mallet, or the instrument the medicine man strikes his drum with.

Those three principles exhausted the pictographic method, with no exception. In the Indian pictography, every single picture is taken by itself alone; and there is never anything like composition, or a combination of several pictures of single objects into a landscape. In Mexico, to be sure, composition is found; but never east of the Mississippi. Here every picture of an object is separate, and stands by itself, like a Chinese character. In a row of figures each one is separate. That fact is overlooked by imitators. There are no pictures of events composed. Later, however, when Indians have learned in school, they do make compositions, but not before. By this criterion many such writings are known to be false.

This one from eastern Long Island has at the top the figure of a man, next a canoe, then an animal, a bow, a cross, a figure not yet understood, a fish, a serpent, a house or tepee with the centre-pole and others against it. If not genuine, it is a good imitation. It may possibly be a record of an Indian going on a hunting expedition and killing certain animals. It is not im-possibly, and even not improbably, the record of a hunting expedition. It is not in the style of a medicine-writing.

President Brinton added that he had sent, this summer, for photographs of the inscriptions at Chattauta, East Tennessee. They are evidently natural markings, geological in character, formed of fine-grained sandstone, upheaved, and with natural shrinkage cracks that might be mistaken for writing, but only natural and geological.

Many such false or fraudulent inscriptions are coming up from time to time, two or three every year; but they can be detected by means of these principles.

Vice-President Jordan asked if there were any decipherment of the inscriptions.

President Brinton answered that some marks, foot-prints, had explanatory legends or traditions. Some were considered to be tracks of gods. Some such inscriptions at Newark have been considered to be records of the Shawnees when they removed to the West.

Mr. Jordan asked if any pictographs described the flood.

President Brinton answered that none did, except some in Mexico, one of which, a celebrated one, he described as it was in a Mexican codex, pictured and described by Humboldt.

In answer to an inquiry by the President, Mr. Platt said that the only instance of a native inscription in Mashonaland, given in Bent's book, may be explained by natural fissures in the sandstone.

Mr. Jordan inquired about the Susquehanna pictographs.

President Brinton answered that in California inscriptions carefully and laboriously painted or cut, with much time and trouble, sometimes have been made only for very temporary purposes,—telling, for example, where the tribe is going on an expedition. Sometimes inscriptions are made with enormous pains. There is an inscription at Apuru, on the Orinoco, that must have been made by men let down with ropes from the top of a high cliff. It must have been made for ceremonial purposes. The makers are unknown.

Mr. Platt spoke of the cuneiform inscriptions on the banks of the Euphrates. But Dr. Brinton said they were not hieroglyphic or pictorial; though the oldest cuneiform has been argued to be a development of pictography. Yet the oldest is still in the same wedge-shaped form as the later. De la Couperie's theory was also mentioned, identifying the Accadian oldest forms with Chinese; but Dr. Brinton pointed out that Halévy, Haupt, and some others regarded the oldest Accadian as merely a hieratic script and really a Semitic language, Babylonian, with characters of different phonetic values and with terminations; though others claim it to be Turanian,—a question not yet decided.

Special thanks were voted to Mr. Clarence B. Moore for the three fine framed photographs of the Boro Budur Temple of Java.

President Brinton gave the Society a medal, struck and for sale at Chicago, representing the Mexican Calendar Stone.

November 2d, 1893.

The President, Dr. D. G. Brinton, spoke of recent archæological explorations in Asia Minor. Anatolia is one of the most interesting fields for archæological exploration. Noah is said to have landed on Ararat; and many things point to the region as a central spot in the history of mankind, whence tribes of men were dispersed. Recent important investigations have been made by Germans, Frenchmen, and Russians. In the north lived the Hittites, now called Chaldi, near Lake Van, partly in what is now Russian territory, partly in Turkish; and the most important studies of them have been made by Russians. There have also been researches by the French; for example, by Hyvernat; likewise by the English, Sayce and others. It is found that about six or seven hundred years before Christ there was a tribe there that developed a civilization of considerable importance. They had a written language, written with a syllabary. They have been identified with the Hittites of the Bible. The Egyptians, about the time of the eighteenth and nineteenth dynasties, were in constant conflict with the Hittites. But it has now, within the last year, been proved by Halévy, through their inscriptions, that the Hittites were Semitic. The latest writers, however, speak of the Vans, or Chaldi, as Pseudo-Hittites, distinct from the Bible Hittites, who were Semitic. For it is now probable that the later Hittites were Aryans; but Sayce makes them Georgians; others make them Turanians. Yet, though Aryans, they developed a separate method of writing. Half a dozen words have been made out. An inscription at Teprocalli, almost interpreted, shows that they were perhaps connected with the ancient Armenians. At

Sinjirli were found inscriptions six hundred or seven hundred years old that proved to be in the Phœnician dialect.

There is a peculiar appearance in some of the inhabitants:—small size, round heads, dark hair; a striking resemblance in the mountaineers of Anatolia to the vigorous Auvergnats. The resemblance is based on physical peculiarities, not on the language. The question is still somewhat an open one, where the wave of Aryan migration originated. Dr. Brinton's own opinion is that it originated in Europe, crossed the Bosphorus to Asia, went to Persia, thence to Hindoostan (about 2000 B. C.), and thence to Cambodia. Language and physical characters seem to prove that. The blonde character is most strongly visible in Europe, gradually disappearing eastward, until small traces only remain in the Brahmins. The language is also purer in Europe; in Lithuania the peasants use language much more like the Sanskrit than the peasants of India do. Therefore, the migration seems to have been eastward, not westward, as we have generally been taught.

President Brinton also said that the inscription from eastern Long Island discussed at the last meeting would be published in the *Archæologist*. It has led to the pointing out of an inscription in Ohio. The Ohio inscription is very dim, on a small stone about four inches long by two inches wide, without any connection between the figures. It was apparently written in play by some Indian or Indian boy; and was probably not an inscription intended to convey any idea.

Mr. W. Bailey said he had seen an imitation scarabæus, just arrived from Italy, that was very carefully made; but with a glass the paint could be detected. Yet the scarabæus was very perfectly molded and polished, as if new. It was made of terra cotta, a very good imitation.

The Curator of Numismatics, Mr. F. D. Langenheim, reported on his work and the Society's coin collections at Memorial Hall. With Mr. Dalton Dorr, of the Pennsylvania Museum there, he had gone over the coin collections exhibited, and had been at work upon them during May, June, September, and October of this year. By his recommendation, Mr. Dorr had employed Mr. Hans M. Wilder, a Dane, to identify the coins and make a list of them. Although it had been said that there were lists of the Society's coins and of the coin collections deposited in the care of the Society by the American Philosophical Society and by the

Philadelphia Library Company, no lists had been discovered that were precise enough to identify all the individual coins of each of the collections.

Mr. Langenheim was by vote instructed to inform Mr. Dorr that the Society would pay its proper share of the expense of cataloguing the coins.

At Mr. Platt's request, Mr. Langenheim reported on the condition of the Numismatic collection, and suggested that all the remaining coins of the Society be sent to Memorial Hall for exhibition, and moved that a committee of three be appointed to consult with the Memorial Hall authorities as to the expediency of sending the remaining coins to Memorial Hall to be catalogued and exhibited. It was so voted, and the President appointed Messrs. F. D. Langenheim, H. Rogers, and C. Stevenson as that committee. Mr. Platt spoke in favor of the removal of the remaining coins to Memorial Hall.

At the suggestion of the Treasurer, Mr. Harry Rogers, a committee was appointed to audit his accounts. The President appointed Mr. Franklin Platt and Mr. Chas. D. Clark as that committee.

Messrs. F. Platt, W. Bailey, and C. Stevenson were appointed a committee to report nominations for officers and standing committees at the next meeting.

DECEMBER 7TH, 1893.

The death was announced of Charles C. Jones, Jr., Esq., Honorary Vice-President of the Society for Georgia, July 19th, 1893, aged 62.

Mr. F. D. Langenheim read a newspaper extract on wooden money in England; that is, the wooden tallies, or checks, used in England, and even in the Bank of England; the same kind of tallies as those used by bakers in Philadelphia.

The President, Dr. D. G. Brinton, read and commented on an extract from the *Jewellers' Circular* of November 1st, 1893, handed him by Mr. W. Bailey. It described a prehistoric diamond mine near Winburg, in the Orange Free State, South Africa: a shaft about thirty feet deep, covered by dry brushwood and stone, and containing a windlass that had fallen to the bottom, tools of good iron but primitive design, and skeletons supposed to be of men seven and eight feet high, in one case with iron fetters on the ankles. Tunneling had been driven about twenty yards in three directions to fairly rich diamond-bearing ground.

President Brinton remarked that the diamond mines were worked after the discovery of iron; and that the height indicated by the skeletons was no doubt exaggerated, as is very apt to happen, and was probably in reality five feet and a half or six feet instead of seven. He added that Bent had discovered ruins near Zimbabwe in Mashonaland, and at Ava, the present Aksum, in Abyssinia, with inscriptions in the Himyaritic language, doubtless of about 800 B. C.; and has connected these Abyssinian and Mashonaland ruins by their architectural designs and motifs, and finds that they also resemble Himyaritic ruins in Arabia. It would appear, then, that from 1200 to 800 B. C. there was a great Himyaritic kingdom that extended all the way to Mashonaland. It is one of the most interesting of recent archæological discoveries. The Queen of Sheba brought to Solomon more gold and spices than had hitherto been known. There can scarcely be a doubt that Ophir was Mashonaland, which would therefore be included in a reconstruction of the great Arabian Himyaritic kingdom.

Mr. Franklin Platt spoke further of the fact that Arabia was anciently often mentioned as the source of gold; but that Arabia itself really produces no gold. Also that in Falmouth Harbor a mold was found identical with the form of the gold ingots of Phœnicia.

President Brinton recalled that, according to the Book of Kings, Phœnician sailors were sent in the ships that went to Ophir.

Mr. Platt further pointed out that on the streams of the South African coast it was only the lower forty or fifty miles that were unhealthy, and that further up stream the country was healthy; that there were numerous ancient mining drifts, and that the alluvium of the valleys had been washed for gold, every foot from the headwaters to the ocean; that a thousand years must have been required for so much work.

Mr. Maxwell Sommerville said that judging from some inscriptions the Himyarites existed perhaps until Mahomet's time. Mahomet gave the remaining districts where the Himyaritic language was used some decades, perhaps forty years, in which they might continue to use that language. Many inscriptions were probably written in gold in the Himyaritic language as late as A. D. 600 or even 700. Mr. Sommerville promised to give the Society, at some future meeting, a photograph from Paris with a Himyaritic inscription.

Mr. Langenheim exhibited a set of Hawaiian coins, all silver, which he thought were made at the San Francisco mint.

Dr. R. H. Lamborn exhibited some Samoan fire-sticks, that he had obtained from the Samoan village at Chicago during the World's Fair; and he showed how they were used. The man who kindles the fire sits on the floor of the cabin, and one piece of the wood is laid on the floor and one end of the other stick is pressed with much muscular force upon the first, and rubbed continuously and rapidly back and forth, producing the right amount of wood-powder at the proper place, at the end of the little channel worn by the rubbing, and in half a minute igniting it by the heat of the friction. The wood of these specimens was Samoan; but they said that one kind of wood growing near Chicago would do.

Dr. Lamborn also exhibited a specimen from the lowest and best layer of the Catlinite red pipestone quarry. The stone is still used in barter by the Indians, who come in their wagons and carry it away, and have done so for three years past. The whole bed is about ten inches thick, divided into layers from half an inch to two inches thick. A piece five inches square and two inches thick is valued at $30 by the Indians. The man who sold the present specimen has land there, and has laid out a town there called Pipestone, and is about to publish a book about the place.

Dr. Lamborn furthermore spoke of a machine for immensely reducing drawings with absolute accuracy, particularly for making types; but it might also be used for making medals. For brevier type the reduction is one sixteen-thousandth of the original surface of the drawing. Purely mechanical means only are used, and the principles of the pantograph carried out with extreme care. The machine is used in making all the best type. A drawing is made, nine inches long, and then accurately reduced. Only eighteen machines have been made, costing $5,000 each. The machine was exhibited in Machinery Hall at the Chicago World's Fair.

Mr. Sommerville exhibited a small but very remarkable engraved stone, with a camel engraved on it and a Sassanide inscription, recently obtained by him through Professor Hilprecht at Constantinople. Such stones are almost all imperfect; but this one is only slightly fractured at the edges and is nearly perfect. Mr. Sommerville has seen thousands of such stones, but never before one with a camel. The stone, he said, dates from about A. D. 250.

Mr. Sommerville extolled the attainments of Dr. Isaac H. Hall, who had been drawn away from Philadelphia to the New York Metropolitan Museum. Dr. Hall reads many of the Abraxas inscriptions most remarkably, equal to anybody in the French Academy of Inscriptions. In Mr. Sommerville's book, near the end, there are a page and a half of inscriptions deciphered by Dr. Hall.

Mr. Langenheim reported for the committee on the removal of the Society's remaining coins that Mr. Dorr, of the Pennsylvania Museum, had expressed gratification at the proposal to deposit them there. Mr. Langenheim said the coins already there were properly listed and very safely exhibited. Mr. Dorr, in a letter dated the 7th of December, had urged that the whole expense of listing the 2,200 coins, or thereabouts, amounting to about $66, should be paid by the Society; though his original purpose was that the Society should pay one-half the expense. Mr. Langenheim, in answer to an inquiry, spoke in high terms of Mr. Wilder's ability in listing the coins and of the merits of his list. Mr. Langenheim said that Mr. Henry Phillips, Jr., had told him that of the coins exhibited at Memorial Hall about three-fourths belong to the Philadelphia Library Company, about fifteen per cent. to the American Philosophical Society, and about ten per cent. to the Numismatic and Antiquarian Society.

On motion of Mr. Platt it was voted that the committee continue its work and be authorized to deposit at Memorial Hall the remaining coins and medals of the Society, including the six hundred medals, or thereabouts, exhibited by the Society at Madrid and Chicago, where it received an award.

Mr. Sommerville suggested that a receipt be taken for the coins of the Society. Mr. Langenheim said that Mr. Dorr was only willing to accept the deposit of the coins on giving a receipt, first a provisional one, and, after listing, a detailed receipt.

The auditing committee reported that they had audited the Treasurer's accounts for 1892, and had found them correct, and would report on 1893 at the next meeting, after the close of the year.

The committee on nominations reported a list of officers and standing committees, who were unanimously elected, as given at page 7.

After discussion by Messrs. F. Platt and J. T. Morris, it was, on motion of Mr. H. Rogers, voted that Messrs. Morris and Platt be a committee to ascertain whether accommodations for the Society could be obtained in the building of the Pennsylvania Museum and School of Industrial Art, at Broad and Pine Streets, and on what terms.

1894.

JANUARY 4TH.

Mr. Stewart Culin resumed his duties as Recording Secretary.

Mr. Henry C. Mercer read a paper on "The Prehistoric Remains Found in the Nickajack and Lookout Mountain Caves, near Chattanooga, Tenn."

The President, Dr. D. G. Brinton, and Mr. Franklin Platt discussed the paper.

FEBRUARY 1ST.

The President, Dr. D. G. Brinton, read a communication from Mr. Henry C. Mercer, who was unavoidably absent, on "The Condition of Early Prehistoric Man in Europe," raising the question whether the remains indicate a warmer climate than the present one. French writers take an affirmative view, but Prof. Boyd Dawkins and the English archæologists disagree with them. The bones of the reindeer are found associated with those of the rhinoceros and hippopotamus in the English caves, and as those animals could not have lived together, Mr. Mercer suggested that the relics of the sub-tropical animals might have been washed into their present position in association with the arctic fauna. He does not consider the position taken by the French archæologists can be maintained.

Mr. John T. Morris exhibited a stamped plate of copper, about two feet long, painted with conventional designs of the Indians of the Northwest Coast. He had purchased it at Fort Wrangel.

The President, Dr. D. G. Brinton, said that it was one of the objects used as money by the Haidahs and other Indians of that coast, and he declared it to be an unusually large specimen.

Mr. Culin exhibited a pack of Corean playing cards, and an object from Cairo, like a puzzle, consisting of a tube of bamboo with strings of colored worsted.

An interesting discussion occurred with reference to the unusually large quantities of Phœnician glass that is now offered for sale in New York City and elsewhere. Prof. Maxwell Sommerville said that this glass displayed forms new to collectors, but was of unquestioned authenticity. In his opinion, probably some great find had been made in a subterranean cavern, and was now put on the market by the discoverers.

On motion of Mr. Harry Rogers, it was voted that the Curator of Antiquities be authorized to deposit the Society's collection of antiquities in the Archæological Museum of the University of Pennsylvania.

The committee appointed to confer with the Trustees of the Pennsylvania Museum and School of Industrial Art made their report on the proposed removal of the Society's quarters to the School of Industrial Art, at the northwest corner of Broad and Pine Streets. The use of the library rooms at the north end of the Broad Street front had been offered for our monthly meetings, with the privilege of using a large meeting-hall instead, if desired, and with the use of a room for any entertainment after the meetings, and ample wall-space in the library for our books, if our Society should contribute one hundred dollars a year and should put up the book-shelves.

A letter was also received by the President, Dr. D. G. Brinton, from Mr. Wm. Platt Pepper, President of the Museum and School, saying: "The offer made by you, as President of the Numismatic and Antiquarian Society, to contribute yearly to our institution the sum of one hundred dollars in April of each year is accepted with thanks. The use of a suitable room, heated and lighted, will be given for the monthly meetings of your Society, on the first Thursday of each month from October to May, inclusive; also wall space for erecting book-cases and shelving (similar to our own) to accommodate your books, documents, etc.; and your members and others having authority are to have access to the library for reading the books of your Society at all times when our building is open. In case the Numismatic and Antiquarian Society gives up this agreement, it is understood that the book-cases to be erected by it (corresponding with ours) shall be left in position and become the property of the School of Industrial Art. This agreement, if it meets with your approval, may be considered as beginning at this date."

The agreement so set forth was ratified by a vote of the Society and ordered to be spread upon the minutes.

A committee, consisting of Messrs. Chas. D. Clark and Cornelius Stevenson, was appointed to sell or lease the property now occupied by the Society, southeast corner of Twenty-first and Pine Streets, and at the suggestion of Mr. Caleb Milne a sale was particularly recommended.

MARCH 1ST, 1894.

The death was announced of John Baird, a Resident Member, on February 13th.

Dr. John Harshberger, a visitor, on the invitation of President Brinton, made a verbal communication on the distribution of maize in America.

Mr. Cornelius Stevenson read, by appointment, the following paper on "The Cross-bow":

THE CROSS-BOW.

BY CORNELIUS STEVENSON.

The cross-bow, called in Latin *arcus balistarius* or *balista manualis*, and in French *arbalète*, was so named to distinguish it from certain larger machines called balistæ and catapultæ, which were used for battering the walls of towns with stones and lancing darts or projectiles of immense size.

It is an offensive weapon and is composed of a stock with a steel bow fixed in the extremity, and with a groove to receive the bolt. The cord is retained in its place by a nut, which is a circular disk of bone or ivory provided with two notches, one to receive the cord when strung, the other serving as a catch for the trigger. Back of this nut is a spring, by lightly pressing which the bolt is held in its place, to prevent it from falling when the cross-bow is inclined. Two clamps on each side of the stock hold the bow firmly in its place and prevent it from jarring loose. The stock is usually made of yew, or of the wood of the pear tree; but sometimes of ebony, and then it is frequently inlaid with ivory, and the bow damascened, and ornamented with tufts of silk.

The use of weapons made upon the principle of the cross-bow seems to be common to the people of all countries; but its origin can never be satisfactorily ascertained. Some writers say it is of Sicilian origin, while others ascribe its invention to the Cretans. M. Rhodios thinks it existed among the Greeks, and that they called it *gastraphetes*, because the cross-bowman rested it on the pit of the stomach.

According to Francis Grose, Verstegan attributes its introduction into England to the Saxons at the time of Hengist and Horsa, A. D. 457, but gives no authority in support of that supposition. In a print representing their landing, one of them is shown carrying the cross-bow on his shoulder; and so likewise other figures in the picture. The cross-bow is mentioned by William of Tyre in the year 1098, about the time of the first crusade; and a manuscript in the *Bibliothèque Nationale*, at Paris, of the end of the tenth century, shows, in one of its illustrations two cross-bowmen discharging their weapons against the ramparts of the town of Tyre. On the other hand, the Bayeux Tapestry, of the end of the eleventh century, shows both the Normans and Saxons armed with long bows, and it would appear that neither army used the cross-bow at that time; although some writers say that William the Conqueror employed cross-bowmen in his army at the battle of Hastings. Sir Samuel Meyrick* is clearly of the opinion that the cross-bow was in use among the Normans; for he says that "in Domesday Book mention is made of Odo the *arbalester*, as a tenant in capite of the King's lands in Yorkshire. The name shows him to have been a Norman, and this instance is sufficient to prove the introduction of the weapon; though the smallness of the number used might occasion its not being represented in the Bayeux Tapestry." This writer also thinks that during the reign of Rufus it was used principally for hunting purposes; and Wace tells us that Henry, going the same day to New Forest, found the string of his cross-bow broken, and, taking it to a villain to be mended, saw an old woman there who told him he would be king.

The Abbé Suger, in his life of Louis VI, mentions the cross-bow as used in the beginning of the reign of that monarch, about 1108. But at the Council of Lateran, in 1139, Pope Innocent II forbade its use among Christian nations, as being "deathly and hateful to God;" but permitted it against infidels; and the prohibition was confirmed by Pope Innocent III. In spite of this interdict, however, Richard I, of England, armed a part of his army with the arbalist; and, as he was killed by a quarrel shot from one, while besieging the castle of Charlez, near Limoges, in Normandy, his death was considered as a judgment from heaven, inflicted upon him for his impiety. Philip Augustus also formed some bodies of cross-bowmen, both on foot and on horseback.

The Germans made very little use of missile-weapons, until

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*Note at foot of page 15, Vol. I, of Meyrick's *Critical Inquiry into Armour*.

the invention of the cross-bow. It seems to have been introduced in Germany at quite an early period, as is evidenced by some frescoes in the cathedral of Brunswick, painted in the reign of Henry the Lion, who died in 1195; and by paintings done in the thirteenth century in the chapel of Saint John at Ghent. It is well-known that Boleslaus, Duke of Schweidnitz, introduced among his subjects the practice of shooting with the cross-bow in the year 1286; and a little later it appears at Nuremberg and Augsburg.

During the reign of James I, King of Aragon, in the thirteenth century, the cross-bow was so elaborate and expensive a weapon that the cross-bowman was regarded as the equal in rank of a knight, a distinction at that time of great importance; and it was enacted that "no knight's son who is not a knight or cross-bowman shall sit at table with knights or their ladies."

After the revival of this arm by Richard I, it was much used in England; and, in the list of forces raised by Edward II against the Scots in the year 1322, the cross-bowman made the second article in the enumeration of the different kinds of soldiers. In the reign of Henry V, of England, the cross-bows were made powerful enough to send the quarrels forty rods; for, in the *Dunstable Chronicle*, we read that "Henry V came near to the city of Roan by forty rods of length, within shotte of quarrell." Cross-bows were frequently used as weapons of defence and mounted on the tops of castles, behind the crenelles of turrets pierced to shoot through, and they were then called crenequins.

The cross-bow was also considered a royal weapon; and Gerard de la Warre, in the reign of Henry III, was appointed cross-bow bearer to that sovereign, and valuable manor lands granted to him, conditional upon his providing cross-bow strings, or materials for making them. Henry VII, however, towards the close of his reign, forbade its use, in order to encourage the more general use of the long bow. But there was a reservation in favor of the nobility; for by the statute 19 Hen. VII, c. 4, A. D. 1508: "No man shall shoot with a cross-bow with the King's license, except he be a lord, or have two hundred marks of land." So strong was the dislike of Henry VIII to this weapon, that, notwithstanding the statute of Henry VII, he caused another statute to be passed in the year 1515 prohibiting its use. These statutes do not, however, seem to have had the desired effect; for, in less than twenty years after, their use had become so common that a new statute was deemed necessary, which imposed a penalty of twenty pounds on anybody that kept one in his house. Its gradual decline in England, however, may date from that period, and no cross-bowmen are to be seen in the paintings of the period representing the battles of Henry VIII. This may be owing to the more general use of gunpowder and the great improvement in the art of gunnery. The use of the cross-bow seems to have been somewhat revived in the reign of Queen Elizabeth, for we find that in the year 1572 the Queen, in a treaty with King Charles IX, of France, agreed to furnish six thousand men, armed partly with long bows and partly with cross-bows.

Independently of the mercenary cross-bowmen, composed for the most part of Genoese and Gascons, in the armies of France from the thirteenth century, a great number of the large towns of the northern provinces of that country possessed companies of cross-bowmen. In 1230, an Act of Parliament gave the title of Master of the *Arbalétriers* to Thibaut de Montléard. This office was considered of great importance and next in rank to that of Marshal of France, and in 1515 was united with that of Grand Master of Artillery. Charles V, in 1359, established for the defence of Paris a body of *arbalétriers* composed of two hundred men, and they elected each year four provosts from their fraternity, who each commanded fifty men. Each man received in time of peace "*deux vieulx gros d'argent, ou la valeur,*" a day, and double that sum when in active service, besides enjoying numerous privileges. This body grew in number in a short time; for, in 1375, we find it augmented by royal ordinance to eight hundred men; and their privileges seem to have grown in proportion. They were not bound to serve beyond the limits of their district, without the consent of the Provosts of Paris and the "*Prévosts des Marchants*"; although they frequently took the field when the necessities of the crown were pressing.

During the reign of Charles VII, the cross-bow became so popular that it almost superseded the long bow; and it was only abandoned as an arm of war under the reign of Francis I. At the battle of Marignan, in the year 1515, however, there were still two hundred *arbalétriers* on horseback, who formed the guard of Francis, and who rendered signal service. Père Daniel, the author of *Discipline Militaire*, says that at Bicoque there was only one *arbalétrier*, but so skilful was he, that "an officer, named

Jean de Cordonne, having opened the vizor of his helmet to take breath, this man struck him in the unguarded part with his arrow and killed him." Finally, in the year 1627, at the siege of La Rochelle, there were some English cross-bowmen in the pay of Richelieu who distinguished themselves at the attack on the island of Ré.

As a missile-weapon the cross-bow was admirable, alike for the accuracy of its aim and for the power of sending its projectiles. Its only disadvantage was its weight and the length of time required to string the bow. For, in the fourteenth century, when it had reached a high state of perfection, a skillful cross-bowman could only shoot about two arrows a minute; while an archer could send a dozen, as he had only to stoop and pick one up from the bundle which he had placed under his foot, without taking his eye from his enemy.

Grose cites Sir John Smith as saying, in his *Instructions and Observations*, that the cross-bow would kill point-blank between forty and sixty yards, and if elevated, seven or eight-score yards, or further. The long bow, however, in the hands of a powerful archer would carry upwards of 250 yards. William de Bellay,* in his *Instructions for the Wars*, written in the year 1589, gives the cross-bow a still greater range. He says: "And were it so, that the archers and cross-bowmen could carry about with them their provision for their bows and cross-bows as easily as the harquebusiers may do theirs for the harquebusse, I would recommend them before the harquebusse, as well for their readiness in shootinge, which is much more quicker, as also for the sureness of their shot, which is almost never in vayne. And although the harquebusier may shoote further, notwithstanding, the archer and cross-bowman will kill at one hundred or two hundred paces off as well as the best harquebusier. And sometimes the harnesse, except it be the better, cannot holde out. At the uttermost the remedy is that they should be brought as neare before they do shoote as possibly they may, and if it were so handled, there would be more slain by their shot than by twice as many harquebusiers. And this I will prove by one cross-bowman who was at Thurin when the Lord Marshal of Annehault was governor there, who, as I have understood, in five or six skirmishes did kill or hurt more of our enemies than five or

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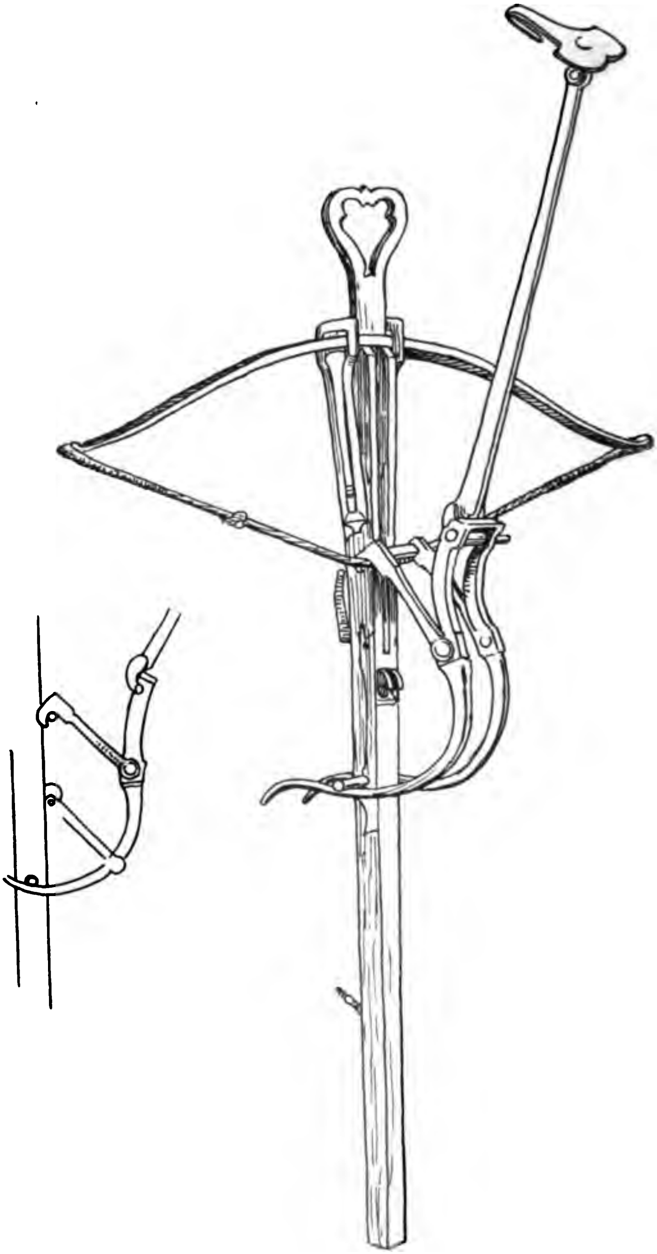
*Grose's *Military Antiquities*, Vol. II, note at foot of page 289.

six of the best harquebusiers did during the whole time of the siege."

In case of rain, the cord of the long bow could easily be detached and put away; while that of the cross-bow, on the contrary, was usually fixed in such a way as to remain permanently, until worn out or removed to be repaired. The rain having wet the cords of the cross-bows at the battle of Cressy (1346) had an important influence on the result of the battle. The French employed fifteen thousand Genoese cross-bowmen in their army; but the day before the battle, Froissart tells us, they were quite fatigued, having marched on foot six leagues completely armed and with their cross-bows. The Genoese were ordered to the front to begin the fray; but a heavy rain, which had fallen before the commencement of the action, had wet the cords and rendered them useless. The English archers, who, during the shower, had put their bows into their cases, withdrew them uninjured, and, taking advantage of this, shot their arrows with such force and effect that it seemed as if it snowed. "When the Genoese felt these arrows, which pierced their arms, head, and even their armor, some of them cut the strings of their bows, while others flung them on the ground, and all turned about and retreated quite discomfited. The French had a large body of men-at-arms on horseback rightly dressed to support the Genoese; but the King of France, seeing them in this disorganized condition, cried out: 'Kill me those scoundrels, for they stop up our road without any reason.' You would then have seen the above-mentioned men-at-arms lay about them, killing all they could of these runaways."

The Genoese, who were always celebrated for their skill in the use of this weapon, do not seem to have lost their prestige by reason of their ill success in this battle; for we find Charles, Earl of Blois, the next year, employed two thousand of them at the siege of La Roche de Rien; and in the *Chronicle of Bertrand de Guesclin* we read: "Seventeen thousand were armed, without reckoning the cross-bowmen, who were Genoese." And again, at the siege of Brest, Froissart tells us that "the Genoese, who were at the edge of the town ditch, and kept up a steady discharge of their arbalests, harried those of the town to such a degree that they durst not show their heads above the battlements; for the Genoese cross-bowmen are such expert marksmen that whenever they aim they are sure to hit."



Arbalète Pied-de-biche. Author's collection.

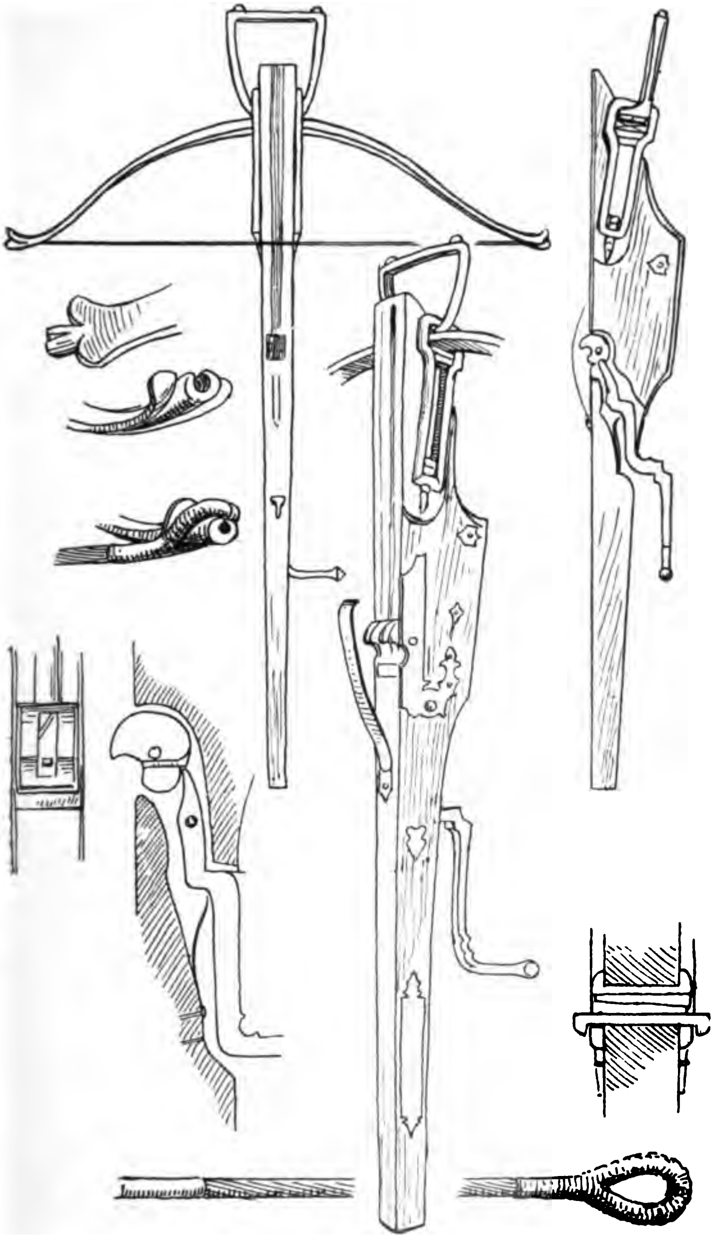
At the commencement of the fifteenth century all the cross-bows then in use had their strings drawn by means of machinery; and of these there were three distinct varieties: the *arbalète à pied-de-biche*, or hind's foot; the *arbalète à tour*, or rolling-purchase cross-bow, sometimes called the *arcubalista grossa ad stapiam*, or great stirrup cross-bow; and the *arbalète à cry*, or *à cric*, or, in English, latch cross-bow. Although some sort of mechanism was used before this time for stringing the bow, we have no reliable information on the process employed for doing so. The manner of bending the bow by means of the foot is very old, authority being found for it by Guillaume le Breton, who wrote in the twelfth century; and the manuscript illustrations of the thirteenth and fourteenth centuries show cross-bows furnished with a stirrup and a hook fastened to the belt by a strong leather strap, which enabled the cross-bowman, by lodging the cord of the bow in the hook and leaning his weight upon his foot in the stirrup, to draw the cord slowly to the nut. But I do not think that the hind's foot cross-bow, the first of the three above named, was in use before the commencement of the fifteenth century; at least, we do not, before that epoch, find any other method of stringing the bow than the one just described. The *arbalète à tours*, or rolling-purchase cross-bow, is seen in paintings about the year 1425; and the *cric*, or latch cross-bow, the last fitted with a mechanism, and also the most powerful, made its appearance about the beginning of the sixteenth century.

The *arbalète à pied-de-biche*, or hind's foot cross-bow, was lighter than the others, and usually carried by horsemen at the saddle-bow. By means of a small stirrup at the extremity of the stock it hung suspended from a hook in the saddle. A short distance below the bow, a hook was fixed in such a manner as to attach itself to the saddle and prevent the bow from shaking and tossing about. The machinery used to bend this cross-bow is a lever, composed of two pieces. One of these pieces, the arm of the lever, is divided into two branches, each provided with a sort of fork. In bending the bow, one of these forks grasps the cord, and the other branch, by means of its long fork, rests on projecting pieces of iron on each side of the stock. The cross-bowman, seizing the lever, draws it towards him, and the fork with the cord in its grasp, following this movement, is brought into the notch, where it is held, and the bow is strung. The apparatus is then removed, and attached to the belt by a hook at the end of the lever.

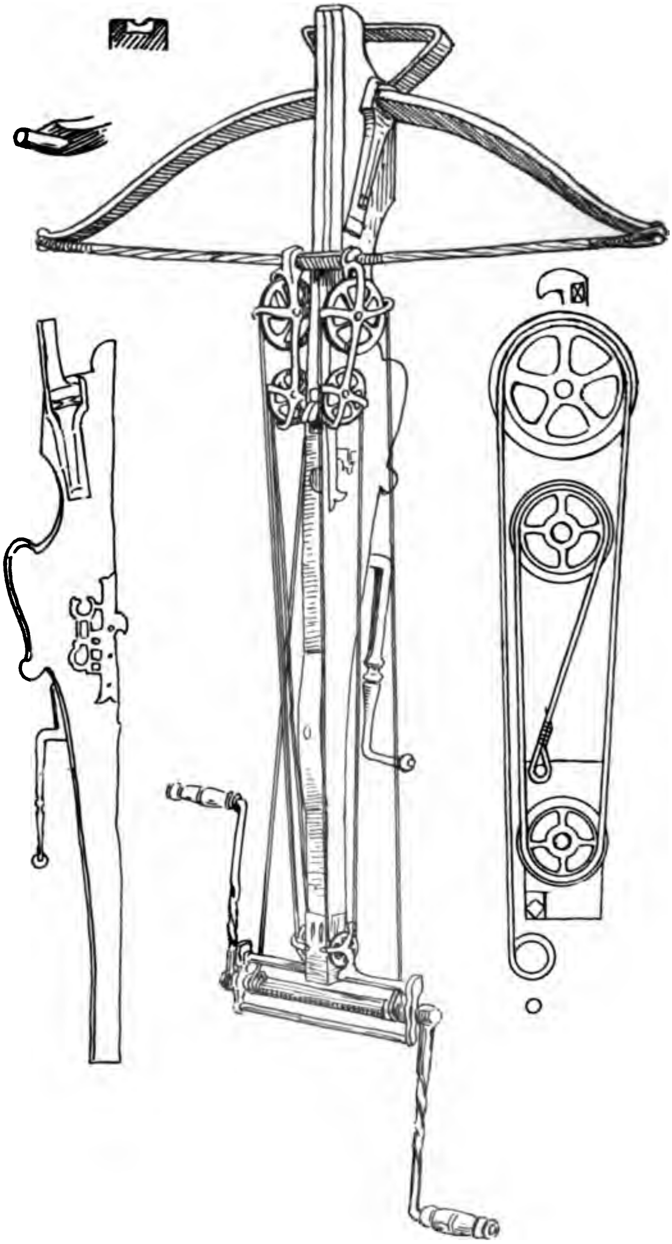
The mechanism for stringing the bow was much quicker, and was less complicated, than that of the rolling-purchase cross-bow; but the bow was not so powerful, and had shorter range. This arm being light, in order to aim properly, it was not necessary to place the butt of the stock under the arm, or to steady the elbow of the left arm against the side, as was the case with the larger bow. With the larger weapon, however, the butt of the stock being placed under the arm, in order to steady it, the cross-bowman had to incline his head to aim accurately. The foot cross-bowmen acquired, however, great skill, and rarely missed their man.

The *arbalète à tours*, or rolling-purchase cross-bow, was too large and cumbersome a weapon to be carried on horseback, and was used by foot soldiers only; and during the first part of the fifteenth century was employed for the defence and in the attack of fortified places. In Germany, such cross-bows were made very large and powerful, often measuring twenty or twenty-five feet in length, and were called *rebaudequins.* They threw a bolt seven or eight feet long, and, besides, propelled stones, clay bullets and incendiary projectiles.

These formidable weapons were mounted on trunnions, and required several men to handle them, much after the manner of our modern artillery. The rolling-purchase cross-bow was long and heavy, and furnished at the end of the stock with a steel stirrup. The one in my collection is made of some very hard wood, stained a dark color and rudely inlaid with ivory. The stock measures three feet three inches in length, and the steel bow, which is fitted into the stock about four inches from the end, is about two feet four inches from end to end, two inches wide in the deepest part and nearly three-quarters of an inch thick, and the ends were so forged as to hold the loops of the cord firmly. The stirrup is six inches in length, and five inches wide at the widest part of the span. The length of the groove for the quarrel is one foot three and a half inches, including that of the nut, which is about half an inch wide. The nut is of horn, with a pivot and a steel pin to receive the extremity of the trigger, and when the bolt was shot it was reversed, having turned on its axis. The jar or concussion produced on the cord, when released from the butt in firing, was so great that it became neces-



·Arbalète à tours.



Arbalète à tours. Author's collection.

sary to fasten the bow firmly in the stock by means of two steel clamps or *renforts;* and it was frequently further protected by thick bands of rope bound over it, the wear and tear of this part of the arm being exceedingly severe. The cord itself was very thick, made usually of hemp, strongly bound round (but not twisted) at the middle and two ends.

In order to draw the cord to the nut, this cross-bow was furnished with what was called the *tour moufle,* or *moulinet,* which, after the bow had been strung, could be removed and hung at the belt, having a hook for that purpose. The *moulinet* consisted of an iron cylinder in a frame, likewise of iron, made to turn by means of two handles in opposite directions, and having a cap, also of iron, to fit on the butt end of the stock. On each side of the cap is a small pulley, the wheel of which has attached to one of its arms a cord, which passes around another wheel of equal size, returns over the first, and then goes round another wheel of double the diameter, and so passes to the cylinder of the *moulinet;* by winding which the power necessary to bend the bow is lessened to a fourth. Attached to the arms of the wheels is a claw made to slide on the plane of the stock, to catch hold of the cord and draw it to the nut.

In order to string the bow, it was necessary to place the end of the foot in the stirrup. The groove, which is of ivory, and in which the bolt rested, is slightly concave, so as to reduce the friction of the bolt on the stock. On account of the weight of this weapon, the cross-bowman, when he wished to fire, was obliged to lean the elbow of his left arm on his left side, and in that position could hold the bow firmly for several seconds.

At the commencement of the fifteenth century, we find the large pavise (or *pavois,* in French), also called mantelet, a shield so large as to be a sort of portable intrenchment, introduced for the purpose of protecting the cross-bowman from the missiles of the enemy while bending his bow. This shield was usually three feet six inches in length, and from twenty-two to twenty-four inches in width, almost entirely covering the body of the bowman. It was square in outline and convex in form, in order that missiles striking it should glide off; and also to leave a space for passing the arm when it was to be carried, or to plant it on the ground by means of a stake. The pavise was made of strips of light wood very skilfully glued together, and covered inside and out with the skin of the deer, and sometimes of the horse, or ass, and pasted with great care on the wood, which was painted or varnished over. According to Sir Samuel Rush Meyrick,* these large shields were sometimes called paniers, on account of their construction, which he describes as follows: "The interior was formed of osiers, over which was placed a cover of aspen wood, or black poplar, the wood of which is white and very light. Sometimes, indeed, this exterior surface was wanting, and then the osiers were more closely interwoven."

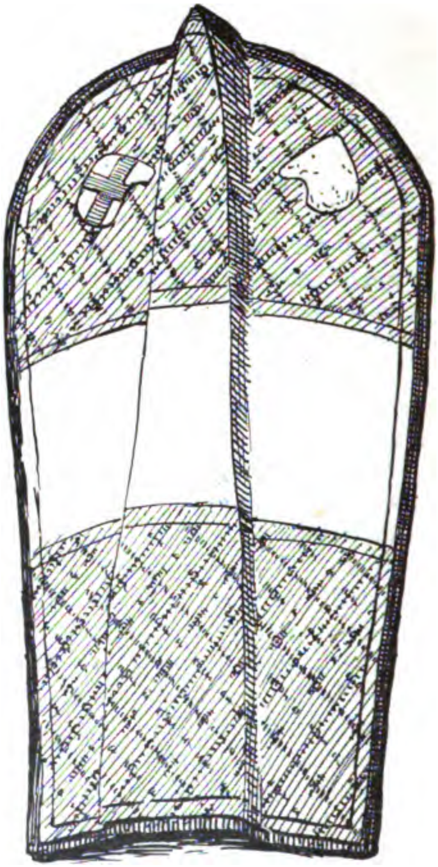


Fig. 1.—Pavise. Author's collection.

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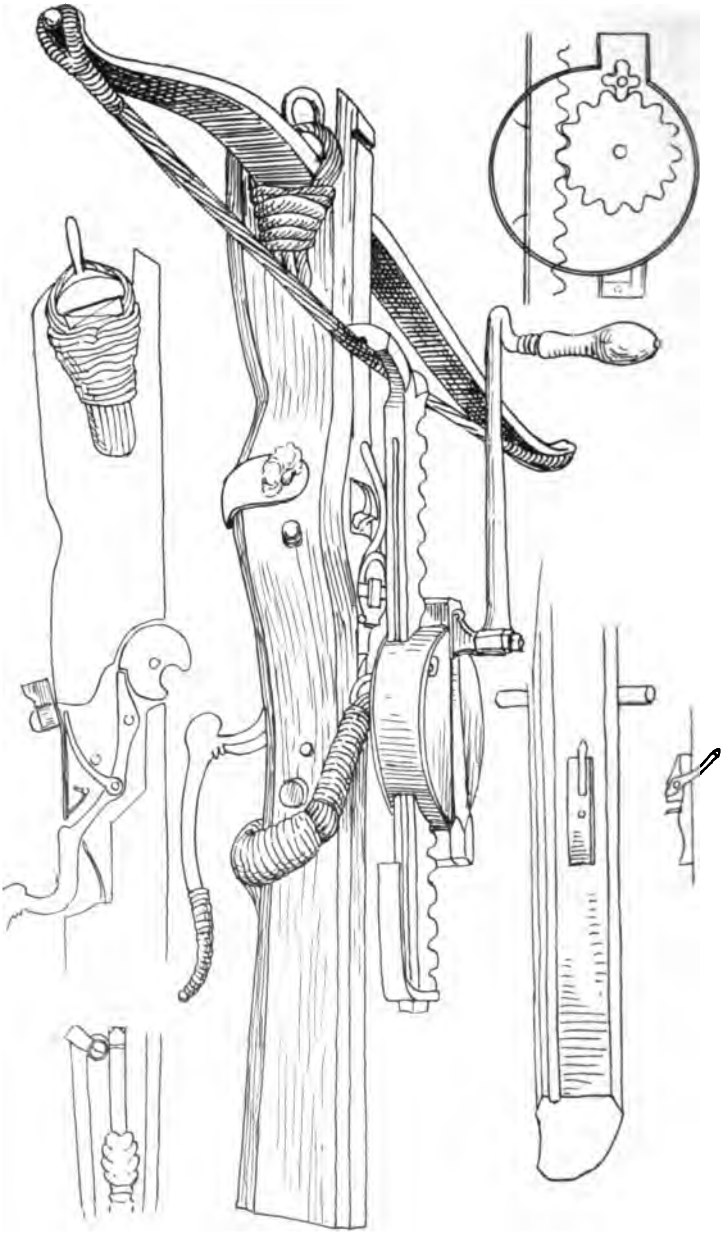
*Meyrick's *Critical Inquiry into Armour*, Vol. II, page 130.



Arbalète à cric.

The shields were frequently charged with the armorial bearings of the great lord under whose banner the cross-bowman was enlisted, or of the vassal who carried them. Mr. W. H. Riggs, the Washington banker, now living in Paris, a celebrated collector of arms, has one of these rare shields; and M. Viollet-le-Duc,* speaking of it, says it is about three feet in height, and has two straps at the upper part, to suspend it on the back, and another at the lower part, through which to pass the arm. It is emblazoned with the arms of the owner on a black field: two shields, one *argent à la croix gueules*, the other *argent à la bande gueules*, accompanied by two lions rampant of the same.

Froissart speaks of the Genoese in the service of France as carrying a pavise in the shape of an elongated heart; and this form is also frequently found on the Italian monuments of the fifteenth century. Sir Samuel Meyrick thinks these shields were carried by a man who preceded the cross-bowman to defend him while he plied his shafts. M. Viollet-le-Duc, on the other hand, is of the opinion that it was habitually carried on the back, enabling him to mount with it in assaulting fortified places. It was also used for the defence of walls, and for carrying the dead and wounded from the field, a usage dating from a remote antiquity. Guillaume le Breton, in describing the siege of Roche'au Moine, in the thirteenth century, speaks of a shield then in use, which he calls the "Parma," and which must have been almost identical in form with the pavise. He says the besieged, in order to get rid of a troublesome pavisor, hit upon an ingenious expedient. One of their bowmen sent forth a shaft to which was affixed a slender cord: the barb having buried itself in the Parma, he pulled the cord, overset it, and with a second shaft slew the enemy, now fully exposed to view.

Let us now turn our attention to the *arbalète à cric*, or latch cross-bow. This bow, during the hundred years or more that it was used, does not seem to have varied materially in form, and, although much shorter, and with a mechanism less complicated than either of the former, was more powerful, on account of the greater strength of the bow. The stock is short; the one in my possession measuring but twenty-three inches in length, and is three inches thick in its widest part. The bow is not held in place by clamps, as in the case of the rolling-purchase cross-bow,

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**Dictionnaire Raisonné du Mobilier Français*, Vol. VI, page 217.

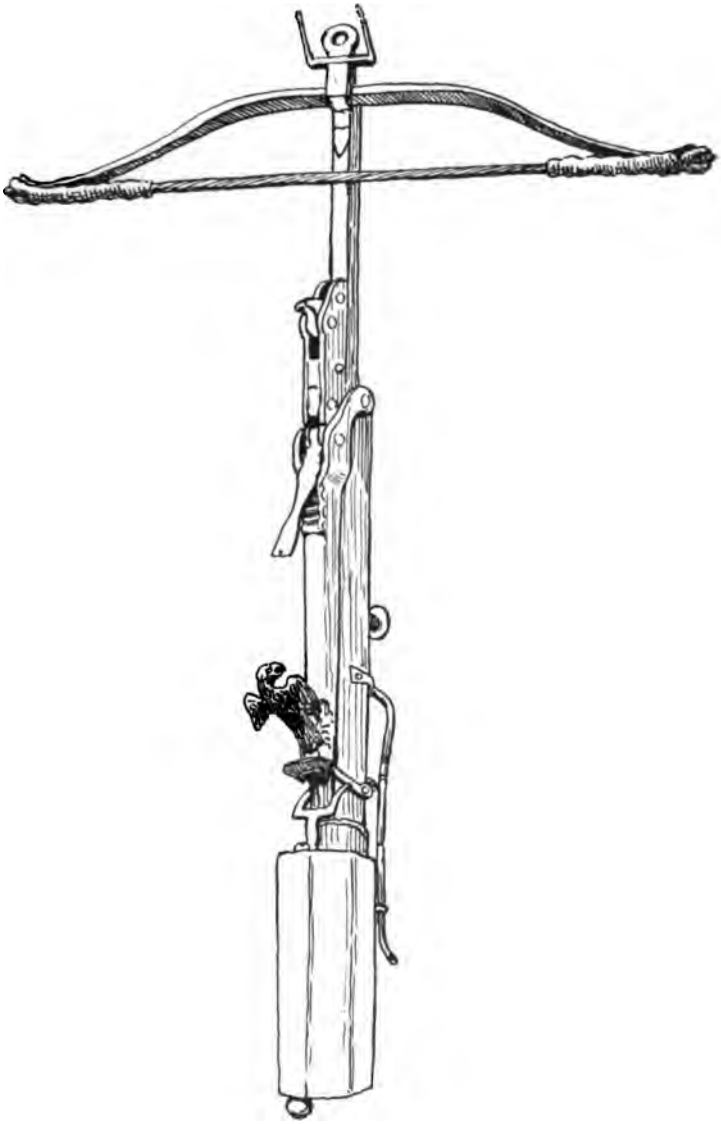
but by an ingenious system of stout cords wound round the bow and run through a hole about four inches and a half from the end of the stock.

The bow is bent by a windlass, which consists of an iron rod with a double claw at its end and having a row of teeth the entire length of one side. The rod passed through an iron box, which contained a cog-wheel made to fit the teeth of the rod; and a handle being fixed to the axle, on turning it, the rod was advanced, until the claws grasped the bowstring; then, by reversing the action of the wheel, the rod was drawn back, and the cord followed it, until it was caught in the nut, and it was wound up. This apparatus was attached to the stock by a loop made of strong cords, which slipped over the butt of the stock, and was held in its place by two iron pins, which projected from each side; and then, when the bow was bent, it could be easily removed and hung at the belt by a hook.

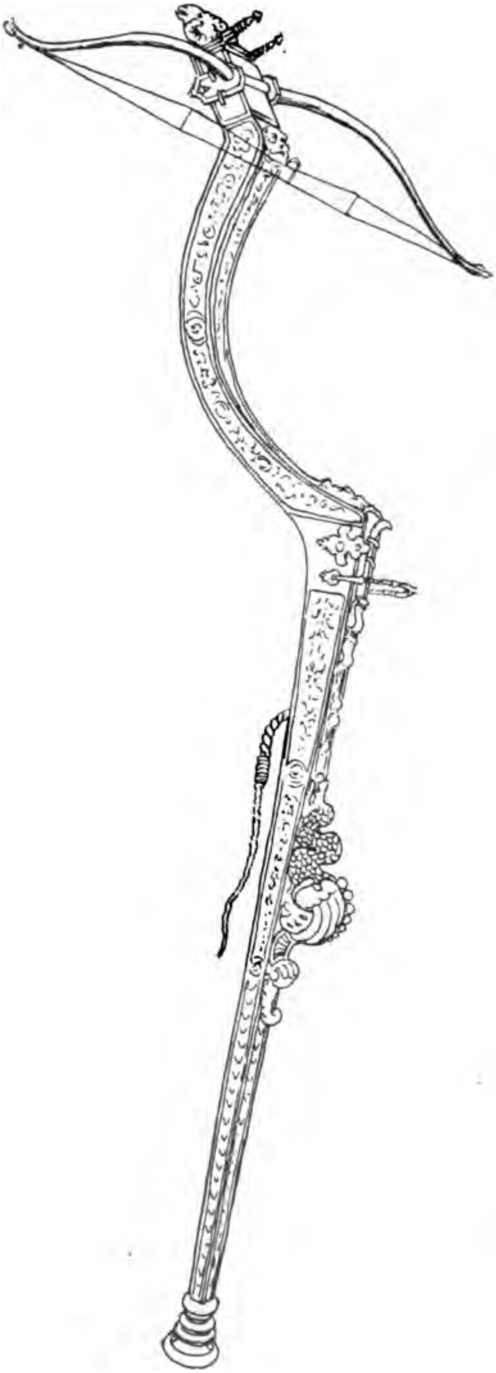
This arm was carried on the back of the cross-bowman, and was held there by a strap, which passed through a leather loop, and from thence through a ring fastened at the upper end of the stock. The bolt was not placed in a groove, as in the case of the other cross-bows, but simply on a flat surface on the face of the stock, which was of ivory, and held in place by a light spring of horn that passed over the nut. The range of this bow is about three hundred feet when held horizontally.

In addition to these three cross-bows, I may briefly mention two others that were in use in the sixteenth and seventeenth centuries, but were only used in the chase: the *arbalète à jalet* (because the missiles used were stones, or lead balls) or prod; and the *arbalète à baguette*, or barrelled cross-bow.

The first-named came into use about the middle of the sixteenth century, and was very light and graceful in form. The stock, at about the distance of two feet six inches from the butt, takes a curve equal in chord to the space required to string the bow, which rendered it easy to carry on the shoulder, as well as prevented any interruption to the projectile force of the bullet by friction. At the commencement of this curve is placed a small lever, which forms a hook at one end, and turns in a movable axis. The hook is to hold the string, which, when the lever is pushed down, is held by means of a trigger, this being furnished with a hook to catch into a hole in the lever. The cord is very different from the others, being double, and the



Arbalèt à jalet. Author's collection.



Arbalète Catherine de Médicis. Author's collection.

two parts separated by two small cylinders of wood equidistant from the extremities and centre. These bows were often highly ornamented, and were either elaborately carved or inlaid with precious metals.

Probably the finest example existing is that of Catherine de Médicis which is preserved in the *Musée des Souverains*, formerly in the *Bibliothèque Impériale*, Paris. It is of Italian workmanship of the best period, and the wood is yew exquisitely carved and inlaid with silver, chiseled and damascened with

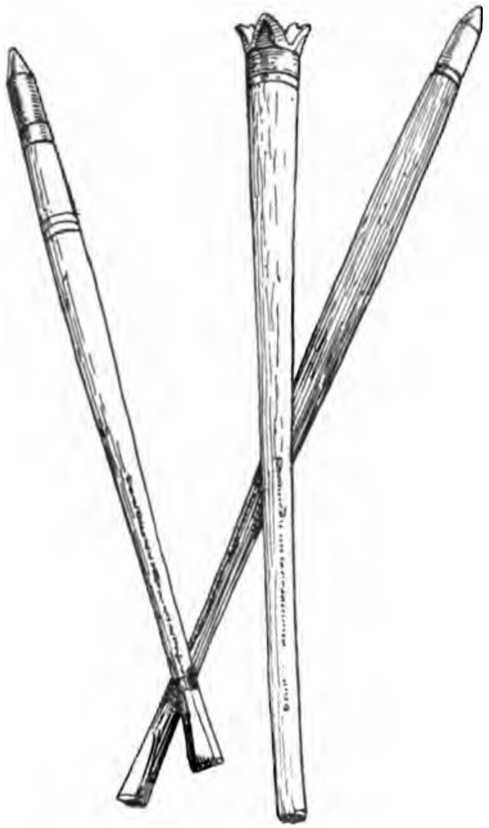


Fig. 2.—Cross-bow bolts. Author's collection.

remarkable taste and execution. In the use of the prod Queen Elizabeth is said to have been a proficient.

The *arbalète à baguette* was an arm in use in the reign of Louis XIV, and is heavy without much strength. It is strung by means of a stick or sort of ramrod, or simply with the hand, and the groove through which the quarrel slips is covered by a half tube, leaving a passage for the string. This tube gives the stock the appearance of a gun. The projectile could either be a bolt or a bullet.

The missiles for all cross-bows (with the exception of the pebble or bullet-shooting ones) were called bolts or quarrels, from the quadrangular shape of their piles or heads. These piles or heads were very varied in form, from the square tip to the sharp, lance-like point; crescents, stars, and other odd shapes being also used. The quarrel was much shorter than the arrow, and its pile heavier and stronger; and the quarrel is only feathered on two sides, while the arrow is feathered on three. The shaft was feathered with wood, leather, or feathers, and set on straight; except with those sometimes used in France called *virctons*, which had the feathering set in a curved manner so as to regulate their flight by giving a rotary movement when passing through the air.

Another kind, called matras (or, *carreau assommeur*, in French), ended in a round knob, which killed without shedding blood. It was used in hunting, especially against feathered game, when the hunters desired to preserve their spoils uninjured. Quarrels also occasionally carried burning tow and tubes filled with inflammable material, in order to set fire to the enemy's works.

It may be of interest, before closing this paper, to speak of the equipment of the cross-bowman when fully prepared for war. It was very cumbersome and heavy. The cross-bow itself weighed about twenty pounds; the quiver, holding usually about twenty bolts, which hung attached to the belt, about four or five pounds more; while on his back he frequently carried the large pavise to protect him while he strung his bow; and at his side he carried a long sword. For headgear he wore a *chapel de fer*, or rounded helmet, but without vizor or protection for the face; and a *camail de mailles*, or collar of chain-mail, which covered the neck and a portion of the chest and shoulders. As body-armor he wore a brigantine, or sort of jacket, in the form of a doublet, the inside of which was of strong linen, or skin, and the outside of velvet, or cloth; while between these two layers of stuff were plates of steel, overlapping each other like the slats of a blind, and fastened to the outside covering by rivets, the heads of which formed an ornament on the outside of the velvet. Under this garment he wore a hauberk, or coat of mail. *Chausses,* or leg coverings, also of linen or silk, and *genouillères,* or knee guards, protected his legs, and completed his equip-

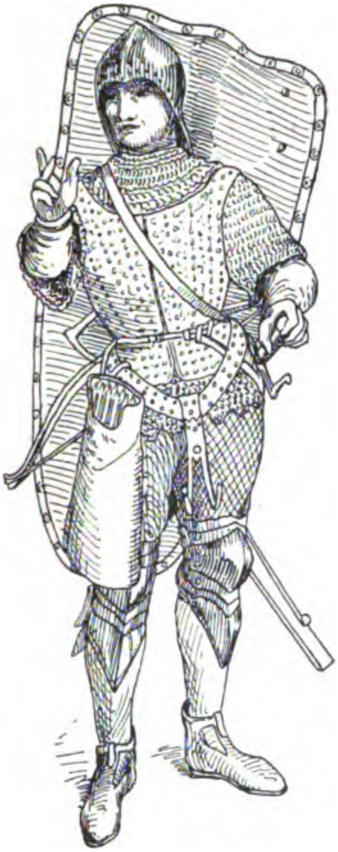


Fig. 3.—Cross-bowman Fully Equipped.

ment, which could not have weighed less than seventy or eighty pounds. It will be readily seen, therefore, that his proper employment was in the defence or attack of fortified places. Behind a parapet or mantelet the cross-bowman could be used to the best advantage; for, firing slowly, he should be under cover.

Prof. Maxwell Sommerville exhibited a stone carving in high relief representing the god Krishna surrounded by serpents.

Mr. John T. Morris exhibited a piece of red syenite from the unfinished obelisk at Assouan.

Mr. F. D. Langenheim exhibited specimens of early German bracteates.

Mr. G. Albert Lewis exhibited a coin struck by the Knight Templars in 1307, which had been in his family for the past two hundred years.

Mr. Tozo Takayanagi, a visitor, presented specimens of the modern paper money and silver and bronze coins of Japan, for which a special vote of thanks was passed.

APRIL 5TH, 1894.

The Society met for the first time at its new hall in the School of Industrial Art, northwest corner of Broad and Pine Streets.

The President, Dr. D. G. Brinton, made an address of welcome to the members in their new hall, and warmly expressed his personal thanks to the President and officers of the Pennsylvania Museum and School of Industrial Art for having given such fine accommodations for the Society. A formal vote of thanks to them was then passed for their hospitality.

Mr. Henry C. Mercer read by appointment a paper on the following topics: "The Arkansas Traveler";* "A Pennsylvania German Fairy Tale"; "The Blind Man and the Giant"; "Pennsylvania Counting-out Rhymes"; "Pennsylvania German Powwow Formulas";† "Indians Mining Lead"; "The Sunbonnet," and "The Grasshopper War."

In the discussion that followed, Mr. Culin said he believed that much of the Pennsylvania German folk-lore, particularly healing formulæ, was derived from German printed books.

A discussion also occurred on the subject of lead mining by the Indians, and President Brinton said that, as far as he knew, no museum contained any leaden object made by the natives of America previous to the Conquest. He suggested that the members of the Society while visiting foreign museums during the

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*Published in the *Century Magazine*, for March, 1891.

†The Pennsylvania German Folk-lore was published by the author at the *Doylestown Intelligencer* press, August, 1896.

coming summer should keep a sharp look-out for such specimens.

Mr. Harry Rogers exhibited a coin of the ancient city of Philadelphia, of which he read the following account:

The ancient autonomous Greek cities invested with the right of making their own laws and coining their own money were very numerous. Among these mint cities were two of the name Philadelphia, one in Syria and the other in the kingdom of Lydia, about one hundred miles east of Smyrna and south of Constantinople. The latter city, now called Ala Shehr, one of the most important cities in Lydia, was founded by Attalus Philadelphus, of Pergamus, and was built to commemorate the love of two royal brothers. The question naturally arises here: Did Penn name the American Philadelphia after the two worthless worthies, Charles II and James II?

The mint of ancient Philadelphia is supposed to have been in operation at least some four hundred years, down to the time of the Emperor Caracalla certainly. A specimen of the work of this ancient mint having come into my possession, it seemed proper at this time to exhibit it to the Society and give a short description. The coin was struck at least two thousand years ago, and is of bronze or brass. Obverse: a female head, representing the city itself, or the inhabitants, with the word ΔΗΜΟΣ. Reverse: a running female figure, half draped, with a dog, also running, and a legend. The figure represents Artemis or Diana, who was a favorite divinity of many of the cities of Asia Minor. She has a bow with arrows and a quiver; also, the ever-present dog. The legend reads: ΦΛ ΦΙΛΑΔΕΛΦΕΩΝ ΝΕΩΚΟΡΩΝ; meaning, "Friend of the Philadelphians, Temple-sweepers,"—as one authority terms them. The last word of the legend represents all those who took care of the temples, or sextons, or vergers, as we should term them.* The coin is rare, and I know of none other in Philadelphia, save the one in the Mint collection.

Philadelphia was not far from Ephesus, where St. Paul is said to have spent much time. It was one of the seven cities of Asia Minor specially written to by St. John in the Revelation. It would, therefore, seem probable that this coinage was well-known to both those apostles.

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* It is "a title found on coins, especially of Asiatic cities, assumed when they had built a temple in honor of their patron god or ruler."—*Liddell & Scott's Lexicon.*

On motion of the Curator of Numismatics, Mr. F. D. Langenheim, it was voted that he be authorized to employ Mr. Hans M. Wilder to list, catalogue, and classify the Society's collection of coins and medals at Memorial Hall; that the collection remain on deposit there for five years after formal receipts for them have been given, and thereafter without expense to the Society; but that should the collection be withdrawn before the end of the five years the Society shall reimburse the Museum for the cost of the cases (about $42 each) in which the collection is exhibited; and further, that the expenses ($66.33) already incurred in listing the 2,216 specimens now on deposit be paid by the Society.

MAY 3D, 1894.

The President, Dr. D. G. Brinton, exhibited a number of Central American objects. Central America, he said, was not only central geographically, but also in point of the highest culture. Among the evidences of culture there are few which are a better index than those we find in the attempts to represent the human form and face. He then exhibited photographs of three terra-cotta heads from Guatemala, which bear comparison, in his estimation, with the highest creations of human art. These heads were obtained some years ago by Dr. Habel in Guatemala, and are now in the Metropolitan Museum of Art in New York City. Dr. Habel was a doctor of medicine who lived in New York some twenty years ago. After accumulating a little money in his profession, he determined to devote his life to American archæology, and went to Guatemala. His greatest find was the tablets of Santa Lucia Cozumelhualpa, now in the museum at Berlin. From Central America he went to Colombia and Peru, and while in South America was taken with a fever, and died. The three heads of the photographs were the best in his collection, and were obtained from Western Guatemala, probably, in Dr. Brinton's opinion, from Santa Lucia.

President Brinton then exhibited a perfect *fac simile* of an original American book, such as was made and printed in America before the Discovery. He used the word "printed" advisedly. Movable stamps of wood, terra-cotta, and stone were used for the purpose, but the blocks hitherto found do not contain the characters used in this book. It consists of a single long sheet, folded like a screen, exactly in the manner of the books commonly used to-day in Burma, or like many Japanese picture books. The text is on both sides of the sheet, so that, after one side has been read, the book can be turned over, and the continuation found on the reverse of the pages. The book is known as the *Codex Cortesianus*, and is a work on astrology, and appears from internal evidence to have been written about A. D. 1450. It was the first reproduction of a native American book ever made in its original book form; and was published in Madrid from the original in the Archæological Museum, at the time of the Columbian celebration in 1892. No portion of it had been translated, nor, indeed, of any other of these documents, but Dr. Brinton said he had been informed by Dr. Förstemann, of Dresden, that he would produce a translation of a whole page of a Maya manuscript at the Congress of Americanists at Stockholm. That will be the first serious attempt to offer a translation of this literature.

A paper recently published in Berlin, containing a *fac simile* of the hieroglyphic designs on pottery in the Berlin Museum, was then exhibited. They were in the pottery of Guatemala, with the same kind of picture-writing as was shown in the book. Nowhere else in America was pottery made with hieroglyphic writing, and, in Dr. Brinton's opinion, these painted vases were the work of men who pictured upon them the records of their tribe. The pottery was in this respect unlike that of North America, which was made by women. The designs on the vases were like those on the specimens recently acquired by the Museum of the University of Pennsylvania.

A series of very curious pictures made by the late Dr. Hermann Carl Berendt was then exhibited, illustrating the worship of the creative principle among the people of Central America. Dr. Berendt spent seventeen years in Mexico and Central America, collecting archæological material, and then met the fate of so many explorers, dying of a fever. The worship of creation as a distinct act was very widely extended over America. A study of the conventional representations, such as were exhibited, is very necessary. They were strictly priestly, and referred entirely to religious conceptions. By means of them the significance of one of the remarkable statuettes in the newly acquired collection in the University Museum became apparent.

Mr. Culin presented a brief *résumé* of a systemtatic examination he recently made of the sports and games of children in Corea. The Chinese influence was apparent in what might be regarded as literary games, and he said that an analogue of the familiar spelling puzzle, or word-building game, of New England was played by Corean children at school. The mystic concepts in which certain games found their origin were much more apparent than in any of the children's games of Europe; and many of the childish sports had a serious divinatory or expiatory association. The tug-of-war was played by people of villages and districts to ascertain which would be the luckiest. Kites were used as scapegoats, and at certain times would be released, with an inscription that they were carrying away misfortune. Toys were not numerous. They nearly all illustrated popular stories. He said there were distinctive elements in Corean games, seemingly of an ethnical character, which promise to lead to conclusions of some importance.*

Mr. Harry Rogers exhibited some interesting coins, comprising two pattern fifty-dollar gold pieces and interesting crowns of the sixteenth and seventeenth centuries.

October 4th, 1894.

Mr. Culin exhibited three large photographs of a group of figures of Powhatan Indians, recently set up by Mr. Frank Hamilton Cushing on the Piney Branch of Rock Creek, just outside the northwest boundary of the city of Washington; and read a letter from Mr. Cushing, with the following particulars:

"The Powhatan Indian quarry figures, first exhibited at Chicago, were modeled somewhat according to the Whyte pictures of the Virginia Indians. Guided by these, they were dressed partly in prehistoric costumes, etc., found in a salt cave, and partly in cinctures and ornaments made by me after the Whyte pictures. Guided by these, also, I reconstructed a wigwam on the very site, as it turned out, where a similar one had stood four or five centuries ago, close to an extensive chipping ground, or workshop, on the borders of the knife-boulder quarries. In one of the excavated quarries, two of the three figures are represented working, while a third is roughly shaping knives

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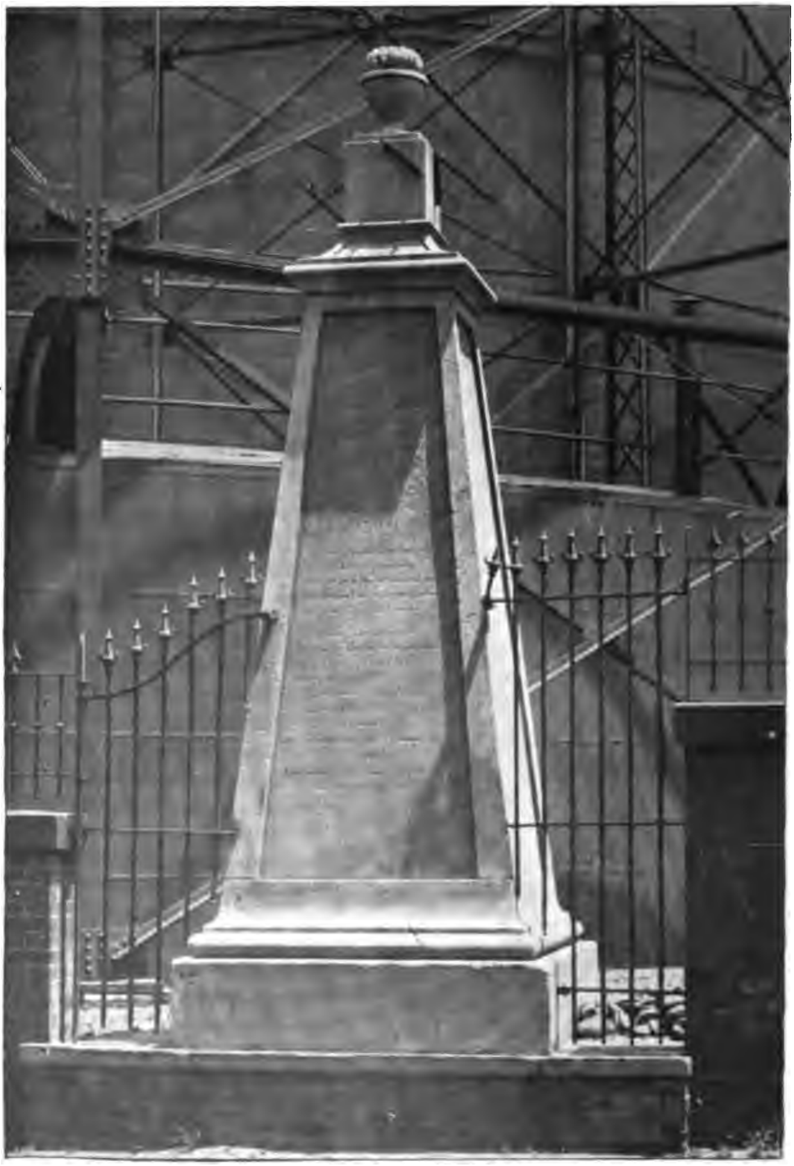
*Published in *Korean Games*, Philadelphia, 1896.

from the pebbles or spalls the others are throwing out. After I had built the little wigwam of a framework of saplings, arranged like the hoops of a hoop-wagon, and covered with rush and bark matting, I came to dig a place for the restoration hearth, which you see surmounted by a barbecue in front of the doorway of the hut. On digging I had the extraordinary experience to strike within six inches of the centre of an ancient stone-lined hearth! So, not only was the erection of a portable wigwam on the site of the old quarry and workshop proper as an addition to the scene, but it was actually, and I may say instinctively, placed by me on the very site of an ancient wigwam of about the same size. After the whole, hut and hearth, had been set up merely by topographic and likely indications, our digging revealed abundant evidences of camping: baking and boiling stones, used axes and hammers, sinkers, knives, and kitchen refuse. The scene may, then, be taken as accurately representing the Powhatan and Pamunkey Indians as they used to work here in the District of Columbia when quarrying the quartzite boulders of which were made their own knives, and the knives of the Indians they traded with in Maryland, Virginia, and the adjacent regions."

Mr. Culin exhibited specimens of American pottery from the Museum of the University of Pennsylvania. One, a vase from the Cramp collection of Guatemala pottery, consisted of a representation in pottery of a mace-gourd, over the upper part of which an engraved skin had been fastened with thongs, which bound it around the segments of the bowl. This vase, of exquisite shape, color, and design, illustrates the application of leather to gourd vessels in early times in Central America. The custom still survives in Mexico, as was well shown by a modern leather-covered flask, likewise exhibited, of native workmanship, purchased in Mexico by Dr. Robert H. Lamborn, and deposited by him in the University Museum.

A pottery vase made by the Mound Builders was then shown, which represented a gourd bowl bound in the same way with leather bands. Mr. Cushing has pointed out the value of the Mound pottery, of which the University possesses one of the largest collections in the world. By means of it the so-called Mound Builders, formerly regarded by many as a peculiar and mysterious people and a different race from the Indians of our day, are shown to have been one with the surviving stocks. He



Market Street Bridge Monument.

has also shown that the fauna revealed by the pottery indicate that they were once a forest-dwelling people. Many of the vessels in the University's collection are simply copies in pottery of wooden trenchers that are still in use in the Northwest.

Mr. Culin also exhibited two pots that represented gourds completely covered with leather, even the original stitches being reproduced. A pottery bowl was also shown that retained an ancient leather band, put around it ages ago to bind it securely. It is clear from this pottery that much that has been regarded as decorative in American pottery is a survival from designs in other materials. Its forms are certainly copied from natural objects, and not the result of caprice, nor an attempt at ornament. The gradual conventionalizing of the types can be traced in the University's collection, which plainly tells the story of the unconscious origin of decorative ideas in America. They appear to have resulted from the interaction of the mythic conceptions and the practical demands of everyday life.

Mr. Westcott Bailey spoke of the condition of the old monument at the corner of Twenty-third and Market Streets, which was erected about 1804. He thought that, if the attention of the authorities was called to it, steps would be taken for its preservation. He believed the monument formerly stood in the centre of the street near the rise of the bridge. It was voted that a committee be appointed to view the monument and report to the Society. The President appointed Messrs. Westcott Bailey, R. H. Lamborn, and Harry Rogers.

It was voted that Mr. Culin be reimbursed the cost of a complete collection of U. S. postal currency bought for exhibition in the Society's collection at Madrid.

It was voted that the Society's collection of paper money be deposited in Memorial Hall, and that Mr. Dorr be consulted in the matter.

NOVEMBER 4TH, 1894.

The death was announced of Mr. Samuel M. Smedley, Resident Member, July 21st, 1894; and of Col. Garrick Mallery, Corresponding Member, October 24th, 1894.

Mr. Julius Kumpei Matsumoto, a visitor, read by invitation a paper on the "Origin of the Japanese Race." *

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* Afterwards published in the *Japan Mail*, Yokohama.

The President, Dr. D. G. Brinton, strongly opposed the theory advanced by Mr. Matsumoto that the so-called Yamato race of Japan were descended from the Hittites; and urged that we do not know anything about the language, culture or history of the Hittites, in spite of what Prof. Sayce has said. Prof. Heinrich Winkler seems to have clearly shown that the Yamato race is Siberic or Turanian.

Mr. Lyman said he agreed with Mr. Matsumoto that there were probably three races in Japan: the Ainos, a Malayan race, and what Mr. Matsumoto called the Yamato race, which last had apparently come to Japan by way of Corea. As the stay in Corea was doubtless somewhat prolonged, it may be said that as Coreans they invaded Japan. That seems far enough to go back at present; and it is quite natural that invaders should have come from Corea, since there is an island between the two countries from which both may be seen. The opinion is corroborated by the strong likeness said to exist between the Corean and Japanese languages. It seems fanciful at present to argue that the Coreans came from any special race that inhabited Western Asia in very ancient times. It has been maintained that the Ainos first inhabited Japan, even in the southwest; that Coreans came from the west; and that a Malay race came from the south and conquered those already on the islands. Jimmu Tenno, called the first human emperor, from whom the present dynasty claims to have originated, is first mentioned as in the extreme southwest.

The following paper by Mr. Clarence B. Moore, on "The Boro Budur Temple of Java," was read, in his absence, by Mr. Inman Horner:

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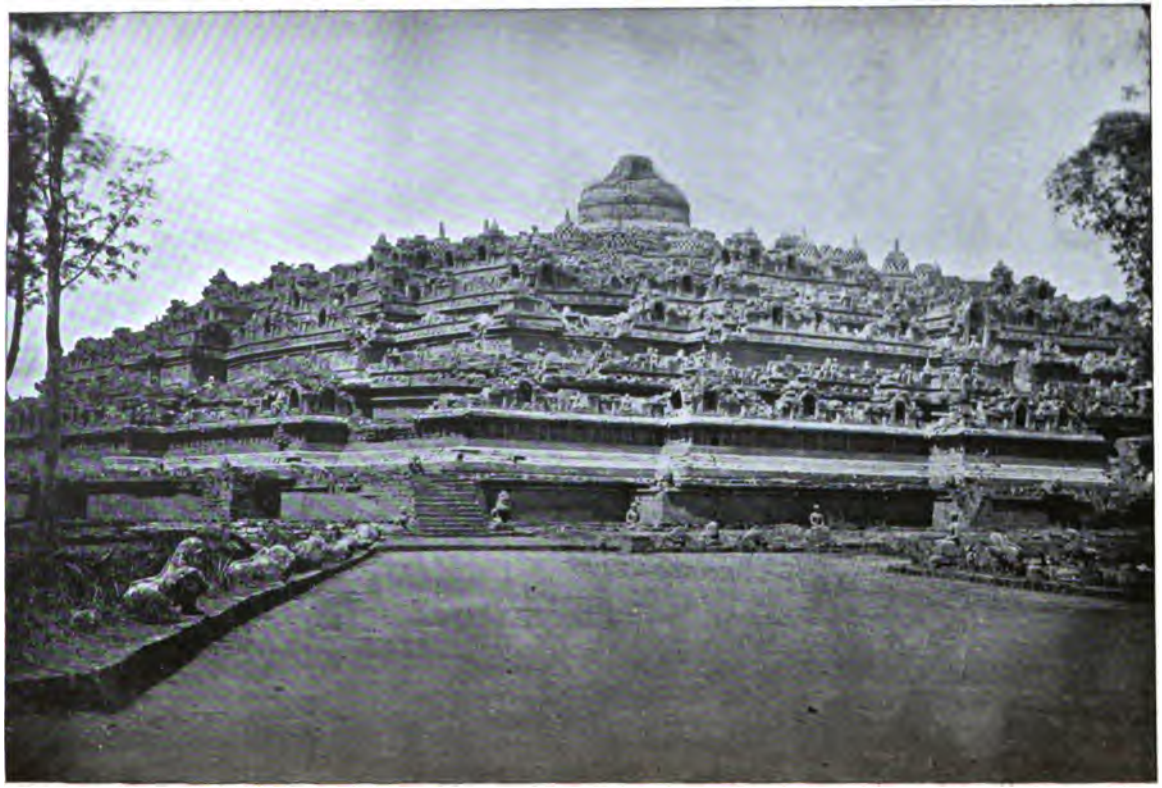

Boro Budur Temple.

THE BORO BUDUR TEMPLE OF JAVA.

BY CLARENCE B. MOORE.

It could doubtless be asserted with perfect truth that to the great majority of cultivated persons—persons to whom the Acropolis, the Colosseum, and the Pyramids are almost household words,—the name even of the wonderful lava temple in the heart of Java, the Boro Budur, is entirely unknown. Yet, perhaps, in certain respects the Boro Bodur fully equals any now-existing monument of bygone ages; and it is difficult to explain the general lack of information concerning it, except that travelers to Java rarely get beyond Batavia, or possibly Buitenzorg, and then hasten away to Singapore to continue the beaten track of the "globe-trotter." Moreover, it is almost as hard to obtain information of these ruins in Batavia as it would be in New York.

Batavia is an interesting town, mainly in that one can there best see the very free and easy customs and costumes of the East Indian Dutch. All over the houses and hotels, until time to prepare for dinner, at four or five P. M., the women go about clad in camisoles of linen, with the sarong, or short skirt, reaching half way to the ankle, with stockingless feet thrust into slippers and hair hanging loosely down the back. The sarongs are of the most gaudy colors, and the wearers seem to vie with each other in selecting patterns striking and bizarre to the last degree, in which snakes, dragons, and devils play a prominent part. The retail trade of Java is monopolized by the Chinese, and the hotel is haunted by these people, pack in hand.

From Batavia to Samarang is a two-days' sail, and fortunate it is that the weather is usually calm, for those having a tendency towards seasickness and a consequent horror of tobacco smoke *pro tem.* would otherwise have a hard time. From morning to night, on deck, in the cabin and staterooms, the smoking goes on, a tumbler upside down serving as a rest for the cigar, while the smoker between puffs snatches time to masticate his food. On deck a long piece of lighted punk lies upon a stand in the form of a gilded dragon, and, like the sacred flame of Vesta, is never permitted to die out; a native stands by, ever ready to answer the demand for *api* (fire, in Malay), and to carry the punk to any one wishing a light. At Samarang there was almost no one able to give information as to the itinerary to pursue, but it was explained that an interpreter would be absolutely necessary, inasmuch as nobody in the interior could speak anything save Dutch or Malay. After a long search, the services of a lad of about seventeen, the son of a German tailor, were secured.

Less than three hours by rail from Samarang is the town of Solo, with a much better hotel than one might expect under the circumstances. About two hours more by rail bring the traveler to Brambanan, which place, next to the Boro Budur, contains the most interesting ruins in Java.

The ruins at Brambanan cover a comparatively large area and are mainly interesting for what they must have been, since great havoc has been wrought by the roots of trees, which, extending in all directions, have torn apart the masses of masonry. The stones composing the walls of the various temples are grooved, and fit each other, no cement being used. A number of statues are scattered around, which the traveler from India readily recognizes as representing various gods belonging to the Brahminical pantheon.

In the ruins of Chandi Sewu, or the Thousand Temples, which form part of the remains at Brambanan, are a number of figures apparently of Buddha; though it has been asserted that such is not the case, and that these effigies of stone represent simply votaries in the act of devotion to the Brahminical gods of the place. These figures are the same as all those found at the temple of Boro Budur, and have all the attributes seen in effigies of Buddha elsewhere.

From Brambanan to Djokjokarta is a journey of only half an hour, also by rail. The town of Djokjokarta is the capital of a native Sultan, and has an interesting "water palace" and a large collection of leopards all huddled together into an enormous wooden cage. These beasts are the property and the pride of the Sultan, and are entirely untamed, to all appearance, as they do not hesitate to spring at any outsider whose curiosity draws him into too close proximity to the bars of their wooden home.

If desired, the journey to the Boro Budur can be made in a coach-and-four, the distance being twenty-five miles over a fine broad road, as smooth as a floor and lined with native villages, shaded by towering cocoanut and palm. If a market day, the villagers can be seen, either squatting by the road-

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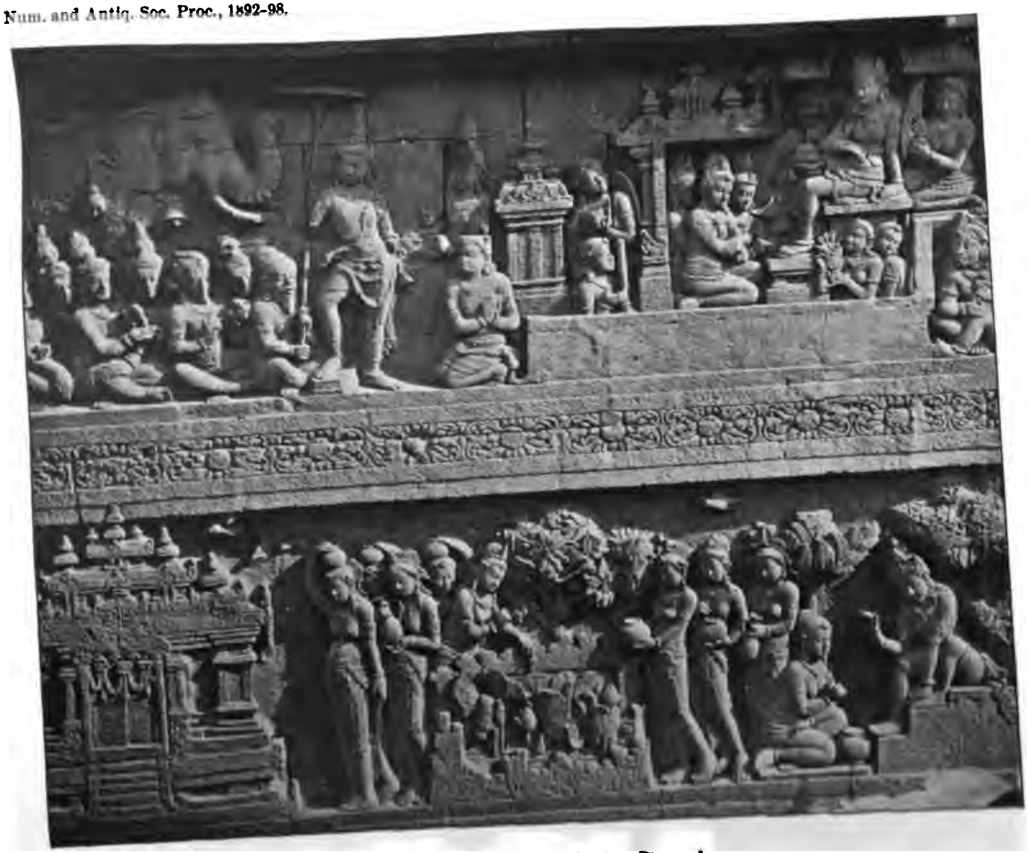
PLATE X.



Bas-reliefs of Boro Budur Temple.

side offering for sale small heaps of food or merchandise, or moving from trader to trader making purchases here and there as their fancy prompts.

It is a journey never to be forgotten, and the drive is all too soon over, when at length the temple of Boro Budur looms in sight. The traveler having previously, in all probability, met no one who has ever seen this wonderful structure, and having heard but the vaguest hints as to its size, and nothing relating to its wealth of statues and bas-reliefs, is fairly dazed. Upon him who has previously seen the temples of Egypt, of Greece, and of India, Baalbec, in Syria, and the wonderful ruins of Girgenti, if ruins they may be called, where the ravages of time are scarcely apparent, and the altar and stairways stand intact—who has lingered among the baths, aqueducts and amphitheatres of Italy and the South of France—it is doubtful if the first impressions of these wonders of architecture in any way equal the effect produced by this lava temple in the heart of Java. When one has seen pictures of famous ruins and photographs in great numbers, and for years read and heard descriptions of the most enthusiastic kind, it is seldom that the reality very far surpasses the preconceived idea. The effect of the Boro Budur is almost stunning, so unexpected is the grandeur of the sight presented.

On the top of an eminence, which has been leveled to some extent to receive it, is the temple of Boro Budur. It is not quite square, but nearly so, each side being about 620 feet in length; it is entirely built of blocks of black lava, excessively hard, to which quality, doubtless, it owes its excellent state of preservation.

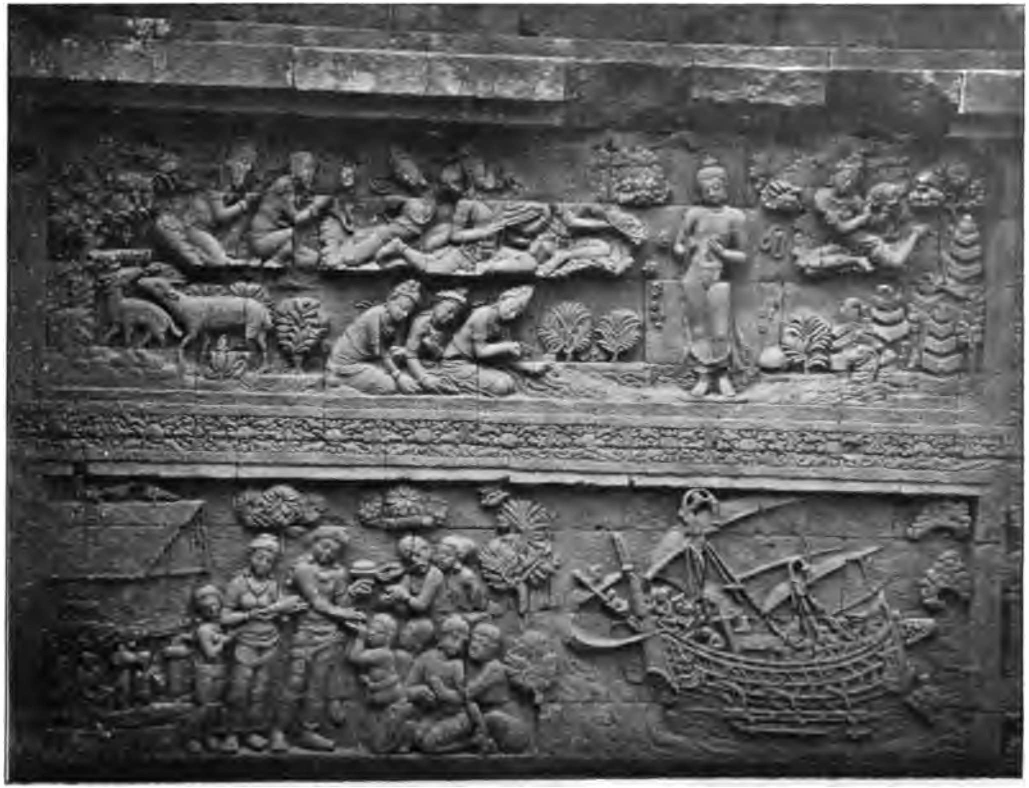
It consists of seven ranges of walls and terraces decreasing in size until they culminate in a level space, in the centre of which stands a species of dome about fifty feet in diameter, containing a gigantic statue of Buddha. This dome is surrounded by three circles of towers constructed of lattice-work of stone, each enshrining an image of Buddha, seventy-two in all. Descending, one passes to successive terraces, the walls of which on the inside are covered with bas-reliefs illustrating everything pertaining to the life of the forgotten race which flourished when the temple was built. These bas-reliefs are executed in a high style of art, and are, all together, over two miles in length. On the outside of the terraces, at regular intervals, are sitting images of Buddha, which certainly number not less than four hundred and possibly double that. These figures are somewhat over life-size, being three feet in height as they sit. The height of the building is about one hundred feet, exclusive of the dome, which is in a partially ruinous condition, and of which about twenty feet still stand. The temple is not one solid mass of masonry, but is built around the conical hill until the base of the dome is reached. Leading up to the temple is a broad avenue with animals of stone on either side, while two lions stand guard at the foot of the stairway of lava.

Who built the Boro Budur? At what era did it first swarm with priests and devotees? We have no records of any sort to guide us. It is asserted by some that the temple derives its name from Boro, the district in which it is situated, and Budur, ancient; while others think it is a corruption of Bara, great, and Buddha. The latter is most probably correct, and the district has taken the name from the temple. The statues at Boro Budur are, to all appearance, images of Buddha; and no statues of undoubted Brahminical origin are to be seen in the building, although one was once discovered in an adjacent field; and in ruins at no great distance are many-armed figures, evidently of some Brahminical god.

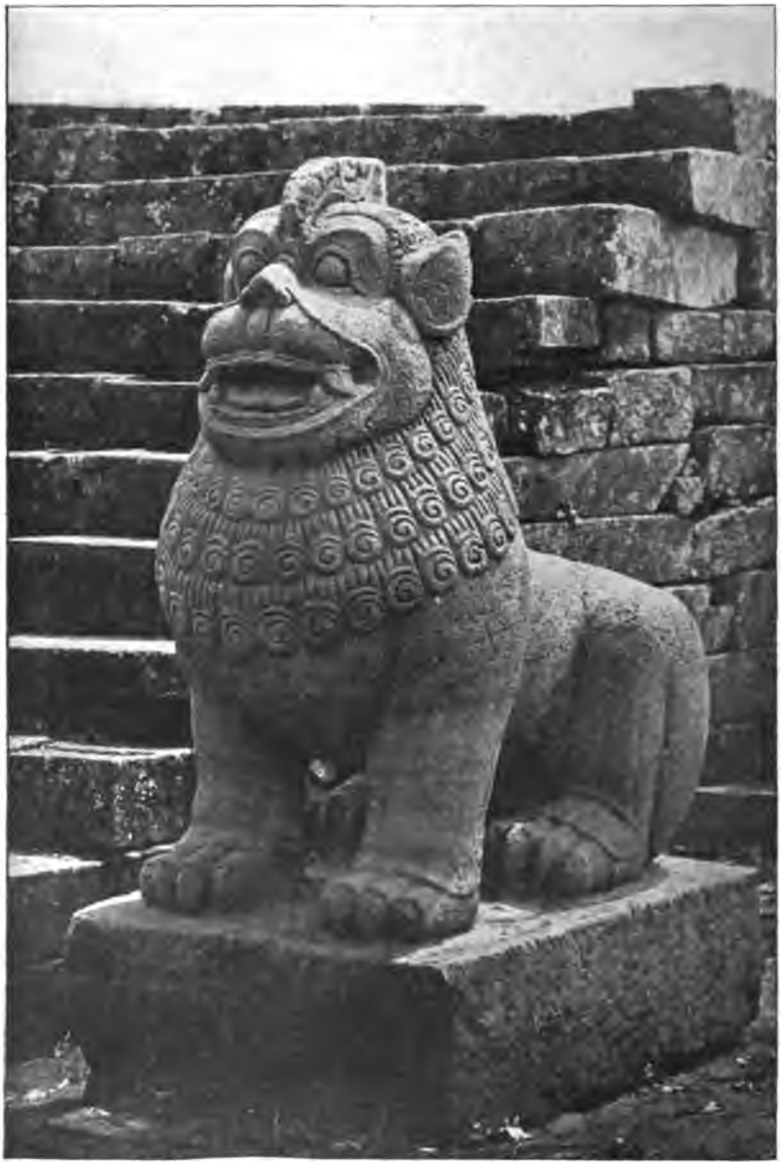
It is hard to mistake an intended likeness of Buddha, for even the most inferior artist throughout the East seems successful in imparting to the countenance that smile of utter contempt for human affairs, which all, and Buddha most of all, must feel in Nirvana. At Brambanan, about thirty-five miles distant, as we have seen, are statues clearly traceable to votaries of Brahma. We know that in India the two religions flourished side by side until a period when, a bitter rivalry having arisen, the milder cult of Buddha was forcibly supplanted by the weird and fantastic gods of the Brahmins.

Whether Buddhism met a similar fate in Java it is impossible to say, there being no reliable records until the conversion of the people to Mohammedanism in the fifteenth century. Some writers have conjectured that the sway of the Hindoos was extended to Java in the sixth century of our era; but this is conjecture only, and probably the people and religions of continental India had gained a foothold in the island at a far earlier period.

The appearance of the ruins in Java can in no way aid us in forming an estimate of their age, since the uniformity of climate and absence of frost leave nothing to injure the temples of lava



Bas-reliefs of Boro Budur Temple.



Lion at foot of Boro Budur stairway.

beyond the rank vegetation and an occasional earthquake. The inhabitants of Java are now Mohammedan and have no traditions relating to the temples of their island, though they still regard the images with a certain reverence. When we consider the mighty mass of masonry, the extreme hardness of the lava, and the great extent and endless variety of the bas-reliefs, it becomes a question whether any architectural remains now existing can compare, in the amount of labor expended, with these wonderful ruins in the interior of Java.

The great Buddhist temples of Ankor, in Cambodia, are so difficult of access and so far removed from the beaten track, that a failure to visit them may readily find excuse; but for the antiquary or the traveler of cultivation reaching Singapore, it is surely a mistake of magnitude to omit a journey to the lava temple of Boro Budur.

THE NEW YORK

Dr. Robert H. Lamborn exhibited specimens of the ordinary tableware of the ancient Romans, commonly known as Samian ware, and found wherever the Roman legions penetrated. One of the pieces, from the Lamborn collection in the University Museum, was found by Mr. Waldo Story at Arezzo. This ware was first formed on the wheel. One specimen bore the stamp of the maker, together with a scratched inscription, probably the name of the original owner.

A discussion ensued upon the presence of glazed ware in American pottery. Its existence has been denied by many authorities; but Dr. Lamborn considered the question practically settled by specimens in the Cramp collection in the University Museum.

President Brinton described the method of finishing pottery among the ancient Mexicans. There are two processes, one being the application of a slip of clay to the ware after its first baking. If the clay contained saline matter it would, on rebaking, give the appearance of a glaze; but he did not regard such glazing as intentional.

Dr. Lamborn said that what he considered to be glaze on the Cramp pottery was doubtless produced in that way.

Dr. Lamborn exhibited a large green stone ear-ring from Mexico, and a jewel of rock crystal from the Sioux of North Dakota, the latter set in leather bound with beads. He regarded this jewel as a remarkable illustration of the first steps towards the use of stones in personal ornament.

Mr. Westcott Bailey reported for the committee on the monument at Twenty-third and Market Streets; and it was voted that the report be offered for publication in some daily newspaper.

A committee, with Mr. Franklin Platt as chairman, was appointed to nominate officers and standing committees for next year.

DECEMBER 6TH, 1894.

The death was announced of Hon. Robert C. Winthrop, Honorary Vice-President of this Society for Massachusetts, November 16th, 1894.

The President, Dr. D. G. Brinton, gave a *résumé* of a paper it had been announced he would read on some objects in the Poinsett collection in the Academy of Natural Sciences; but the paper was not yet completed.

Mr. Carl Edelheim exhibited a number of antique rings, including an Egyptian scarab in its original setting, a white gold ring, and others.

Mr. Edelheim also presented to the Society four specimens of Roman coins, for which special thanks were voted.

Mr. Culin exhibited a painted vase from the great pyramid of Cholula, in Mexico.

President Brinton said the vase was inscribed repeatedly with the first of the characters of the Mexican Book of Days. The great pyramid of Cholula was the religious centre of Anahuac at the time of the Conquest, and was unquestionably the largest artificial structure in the world.

Mr. Westcott Bailey, of the committee on the Market Street bridge monument made an additional report; and expressed the committee's disappointment that the publication of their former report had not induced the descendants of those mentioned on the monument to come forward and aid in its restoration.

Mr. Culin read a recommendation from Mr. Geo. F. Kunz requesting him to coöperate in an effort to secure better designs for the coinage of the United States. The matter was referred to the Committee on Numismatics.

It was voted that Mr. Culin be authorized to remove the library of the Society to the University of Pennsylvania, the books to remain in his personal charge and be accessible to members of the Society.

On motion of Mr. Cornelius Stevenson, it was voted that the Society's real estate at the southeast corner of Twenty-first and Pine Streets be sold to Messrs. Hoben & Doyle for $6,500.

Mr. Franklin Platt, chairman of the committee on nominations, reported that the committee had renominated the entire body of officers and standing committees, with the addition of Prof. F. W. Putnam, of Cambridge, Mass., in the place of the lately deceased Hon. Robert C. Winthrop, as Honorary Vice-President for Massachusetts. The nominations were by vote declared closed, and the whole list of officers and committees was unanimously elected.

1895.

JANUARY 3D.

Mr. Francis Jordan, Jr., read a paper, in which he accounted for the mound known as the "the Hummock," in Great Bay, at Tuckerton, near Atlantic City, New Jersey, by the theory that it was originally a pile dwelling.

Thereupon a discussion ensued, in which the opinion was expressed that the present rate of subsidence of the Atlantic coast of the United States was quite enough to account for the existence of the submerged land around the hummock; and it was doubted that this was originally a pile dwelling. Many instances of the effect of subsidence were adduced by Mr. Iüngerich, Mr. Platt, and others. Mr. Platt was invited by the President to prepare a paper on the influence of geological subsidence or elevation upon the antiquities of the Atlantic coast.

Mr. Cornelius Stevenson exhibited a sword hilt that had belonged to Prince Eugene of Savoy, from the collection of Prince Lichtenstein, of Vienna. A passport of Prince Eugene accompanied the sword, and was also exhibited. Mr. Stevenson read a written description of the ornamentation of the hilt and of its significance, with an account of its history. The object excited lively interest, and was discussed by President Brinton and others.

Mr. Carl Edelheim exhibited a ring with the arms of Ostend; and two rings with the signs of the zodiac, one silver and one gold.

Mr. Culin said these two rings were made by negroes of the west coast of Africa, similar rings having been made in the so-called Dahomey village at the Columbian Exposition.

Mr. Culin exhibited an early English silver penny and three Irish silver pennies, one of William and Mary, and one of Elizabeth. He also exhibited specimens of early Roman coinage.

FEBRUARY 7TH, 1895.

The death was announced of Dr. Robert H. Lamborn, Resident Member and Vice-President of the Society, on the 14th of January.

The President, Dr. D. G. Brinton, spoke *extempore* on the life of Dr. Lamborn and his services to science. They had both been born in the same county and within a year of each other; but first met in Paris in 1860, when both were students—Dr. Lamborn, of mining, and Dr. Brinton, of medicine. Dr. Lamborn published some metallurgical works in early life, at the time of his studies in Germany and France. He never lost sight of the higher elements of culture, and in later life made large collections, which he rendered freely accessible to all students. One of the last acts of his life was to offer a prize for the best essay on what constitutes the highest type of an American citizen. Dr. Brinton had been one of the judges to award the prize; and, in his opinion, Dr. Lamborn himself closely typified the ideal as expressed in the two essays to which the prize was given.

Mr. Franklin Platt spoke briefly on the submergence of the sea-coast, in compliance with the request made at the last meeting. The surface of the earth, he said, is in a state of movement, there being no stability to the crust of the earth. There is a great motion, from the centre of the continent down to the coast line, which is not to be attributed to the shrinking of the crust of the earth. The coast of Texas is sinking. Florida has sunk one thousand feet. From North Carolina northeastward we have submerged forests of our own modern period, and probably since the glacial period. Prof. McGee says that our coast has sunk two feet in a century; others say one foot. We have practically no means of historical comparison, as, for instance, Holland has. Holland has sunk at the rate of four inches in a century since 1732, and at an average rate of one foot in a century during the last one thousand years. It has gone down some twenty-five to thirty feet, and cost Holland more than sixty million dollars. In Sweden, the southern end is sinking and the northern rising. The coast of China is sinking. The islands off the coast have the same fauna as the mainland; and there is no evidence that the islands have long been separated from the coast. It is supposed that Africa is sinking less than any other continental area. Australia has changed very little. The sinking has been continuous, uninterrupted by periods of elevation. In all cases, wherever we find prehistoric human relics at tidewater, the probable subsidence should not be overlooked.

Mr. Lyman called attention to the fact that according to Prof. Salisbury there have been repeated depressions and elevations on the New Jersey coast. He cited three periods of elevation, two of them since the beginning of the glacial epoch, all preceded by depression. The last elevation was forty to sixty feet or more; and was followed by the present subsidence. (See R. D. Salisbury, New Jersey State Geological Report for 1892, pp. 164-166.)

President Brinton spoke of the shell heaps as among the important objects we have to study along the Atlantic coast. They occur from the coast of Florida northward to Maine; and probably further. The remains appear to be of considerable antiquity. Some have been completely washed away, either by simple erosion or by subsidence. He said the submergence seemed to have been in a series of curves, and that with the depression there was also local warping upward.

Mr. Culin exhibited several specimens of American aboriginal pottery of remarkable beauty and finish, recently acquired by the Archæological Museum of the University. One consisted of a cylinder of pottery about two and a half inches in length, with a longitudinal perforation. The cylinder had probably been used for applying pigment; and on the face was a design twice repeated of conventional animal forms. The cylinder was intended to produce a continuous pattern. Another specimen, a small vase, had the form of a very symmetrical human head, bearing twelve circles in a continuous line, one within the other on each cheek. They probably indicated paint or tatooing. Another vase bore the head of an owl; another, a human face. A fragment with an animal's head was also shown. The exact place of manufacture was not known; but the objects were believed to be of South American type, and probably from Ecuador.

It was voted that the next meeting of the Society be held at the Penn Club, and that each member have the privilege of inviting a guest.

March 7th, 1895.

The Society met at the Penn Club House, and as invitations had been issued for a reception, twenty guests were present besides twenty members.

David Milne was requested to act as Recording Secretary, in the absence of Mr. Culin.

President Brinton spoke briefly of the objects of the Society. It was founded in 1858 as a Numismatic Society, but, later on, the study of archæology was included within its province. In this latter field it is more liberal in its scope than many kindred societies, and is in no wise sectional in its investigations. Yet it examines local antiquities, and has taken measures for their protection and preservation.

The significance of the present can be understood only by a knowledge of the past, the indices of the past being essential to a comprehension of man's tendencies and development and of all that pertains to his history. Within the present generation, archæology has made enormous strides, especially in directing men's thoughts to philosophical and spiritual matters as distinguished from material things. It promotes culture and better aims, leading men to a higher excellence in modes and standards of thought, elevating them to a plane where they seek for the perfection of the ideal.

Mr. Chas. E. Dana exhibited a papal medal of the year 1653; also an Arabian compass, such as the Mohammedans use to ascertain the direction of Mecca, before they pray, when traveling.

Mr. Harry Rogers showed a large number of bronze French medals of the Napoleonic period, the majority of them being commemorative of events in the life of the Emperor. As almost every event from the rise until the fall of the power of Napoleon the First was so commemorated, the result was a series of medals unequalled for completeness. The types were executed with great care and skill, the designs being in the classic style which distinguished the French art of that time.

Mr. J. Colvin Randall showed a powder horn of the American Revolution, which he had obtained in Birmingham. One side was covered with a patriotic inscription.*

Mr. J. S. Patterson called the attention of the Society to reputed aboriginal traces in the limestone cave near Port Kennedy, Montgomery County, Pa. The President said the Academy of Natural Sciences was examining the find.

Two silver coins shown by a guest were identified as Spanish-American.

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*See *Bulletin, Free Museum of Science and Art*, University of Pennsylvania, Vol. I, No. 3.

Mr. F. M. Day, a guest, gave an outline of a lecture on the Pantheon, which had lately been delivered by Prof. Ware at the University of Pennsylvania.

President Brinton called attention to a theory advanced by a resident of Savannah, that Florida had been occupied at an early age by a people highly civilized. Many land and water marks had been selected for triangulation in making a complete survey of the land and harbors, which this gentleman is able to designate. President Brinton considered that this theory has some corroboration in external evidence which he is now investigating.

Capt. Collum said he would submit to the Society for its inspection and opinion a bronze head which he thought had come from India.

April 4th, 1895.

The death of Dr. W. S. W. Ruschenberger, Vice-President of the Society, was announced, March 24th, 1895 in his 88th year.

Mr. Cornelius Stevenson exhibited some specimens of historic arms that he had recently acquired from Germany, and that were formerly in the Royal Armory at Dresden. One, a wheel-lock gun, once belonged to the Elector of Saxony, and bore his arms and the date 1560. With it, as an appurtenance, there was a velvet-covered baldric. Small, tubular boxes of tin were hung from the baldric, and had been used to contain the individual charges of powder. Mr. Stevenson also exhibited a morion, inlaid with gold, that belonged to the same Elector.

The President, Dr. D. G. Brinton, gave a brief account of the recent explorations in the caves of Europe, Asia, and America. He said they yielded results entirely at variance with generally accepted theories. French and German archæologists in Europe, and Mr. Henry C. Mercer in America, have made explorations that have revolutionized our ideas about primitive man. The caves in Asia Minor, Syria, and Palestine, and the caves first explored by Mr. Mercer in America, yielded no traces of man associated with extinct animals, as the caves of France and Germany had done. And now Mr. Mercer returns from Yucatan with the same story from that country. He has found nothing there that carries us back to a period more remote than the time of the existing Indians. He finds only man later than the latest extinct animals. The story has already been reversed that man originated somewhere in Eastern Asia. The caves of that region, where his remains, if he existed there, should naturally be found do not yield a trace of early man, such as has been discovered in Europe. The absence of remains of earliest man in those regions points to his having originated in some quarter, just where we do not know, where he developed up to a certain degree of culture.

Mr. Culin made a brief communication with reference to the recent acquisitions of the University Museum.

Mr. John W. Townsend exhibited a Chinese fan of the last century, made of metal inlaid with enamel. The form was that of European fans of the First Empire.

Mr. Westcott Bailey exhibited a two-sous piece struck at Strasburg in the fifth year of Liberty, 1793; and a Washington penny, with the head of Washington crowned with a laurel wreath.

The Corresponding Secretary exhibited a handsome book, *Numismata Londinensia,* lately presented to the Society by the Library Committee of the City of London. It contains an account, with beautiful illustrations, of the medals struck by that city in commemoration of important municipal events, 1831-1893. Special thanks were voted.

Mr. Westcott Bailey reported for the committee on the Market Street bridge monument that he had placed the papers in the hands of Mr. Audenried, who had promised to bring the matter to the attention of the City Council.

MAY 2D, 1895.

Mr. Henry C. Mercer gave an account of the caves of Yucatan lately visited by him. The mountains of Yucatan are honeycombed with caves. The direct object of his search was the vestiges of early man in those caves. Unlike other caves he had explored, they are entered, like wells, from an opening in the top, through which one must let himself down with ropes, by the roots of trees, or by the rude ladders built by the Indians. At first it appeared unlikely that such caves would furnish the evidence desired, on account of their difficulty of access; but he soon discovered that they were the only places where water could be obtained in the dry season, and that they must have been resorted to by any people living in that country. There is no surface water, running springs, or brooks in Yucatan. This fact led the Indians of the earliest times to enter the caves. All of the caves contained human remains, and large stone dishes to catch the water that trickles down from the roof; and the floor is covered with fragments of pottery.

The caves are illuminated by circular openings where the thin crust has broken through at the top. Trees have thrown down their roots through this orifice, vegetation has sprung up luxuriantly, all presenting a fairy-like scene in the light diffused from the opening above. The caves vary greatly in their character, some being intensely hot, others cool; some are comparatively easy of access, others difficult; some drip water from the stalactites, while others are now dry; and some are dens of wild beasts and are dreaded by the Indians. The walls of some of the caves bear petroglyphs, not hieroglyphs in the true sense, but pictures and incised lines. In one cave a projecting stalagmite was cut into the form of an ape's head. It was the cave floor, however, that was the object of the explorer's attack. Trenches were dug in the floor down to the bed-rock. Sections of the cave floors were illustrated by diagrams, and shown to consist of cave earth with bands of ashes and mold, filled with fragments of pottery. The pottery did not vary from top to bottom, and that in the lower layers was polished like that at the top. There were no traces of any other people, of paleolithic man, or of any Indians other than the Mayas, whose descendants still resort to the caves.

Lotan was one of the most interesting and beautiful of the caves. It was entered by a steep incline, followed by stone steps and ladders made of saplings, the work of the Indians. Passing through a narrow passage, within which there were stone walls, apparently barriers against intrusion, one entered a great chamber, 350 feet in height, with a natural skylight at the top. Openings in the great chamber led into passages in which the explorer might easily lose his way.

As the result of his work, Mr. Mercer concluded that the people on first coming to the cave possessed the art of making pottery; and, therefore, that the Mayas developed their culture elsewhere before they came to Yucatan. As nothing was found below their remains, there was no paleolithic man, and no other Indian than the Maya, in Yucatan. Compared with some cave deposits of Europe, they are much more recent. There did not appear to be any remains of pleistocene animals, though the few bones found have not been critically examined. Only three or four arrow-heads were found. From that fact Mr. Mercer concluded they were not hunters, and also that they had no domestic animals. He re-examined his conclusion that the floor reached represented the real bottom; but the affirmative evidence seemed decisive.*

The President, Dr. D. G. Brinton, said that these important and novel observations corresponded with the traditions oι the Mayas, who, according to their accounts, first appeared in the country in the second or third century of our era. Their records seem to imply that they found it uninhabited.

President Brinton spoke of the excavations made by Mr. Gerard Fowke along the Charles River, near Cambridge, Mass., and of his discovery of supposed work of the Northmen. He also spoke of the two Runic inscriptions that had recently been found on the Atlantic coast of America, one near Cambridge, Mass., and one on the line between New York City and Westchester County. He said he had examined both inscriptions with great care; and was satisfied that they were in Runic characters. The only question was whether they were modern frauds or authentic.

A discussion ensued on the question of Runic inscriptions in America, particularly the Yarmouth inscription, referred to by Mr. Culin. President Brinton expressed a favorable opinion as to its genuineness and to the probability that remains of the Pre-Columbian Norse settlers had been found in Eastern America.

Mr. Harry Rogers exhibited a number of medals figured in the work *Numismata Londinensia*, presented at the last meeting, comprising: "In honor of Her Majesty's visit to the Corporation of London, November 9th, 1837"; Alexander II, of Russia; Napoleon III and Eugénie; New Coal Exchange opened, November 30th, 1849; Alexandra, March, 1863.

Mr. Henry Iüngerich presented to the Society a number of specimens of Continental money, and copies of early American newspapers.

On motion of Mr. F. D. Langenheim, Curator of Numismatics, it was voted that the Committee on Numismatics be authorized to dispose of any or all duplicates in the Society's collection now deposited in Memorial Hall, and to purchase with the proceeds any pieces needed to complete the series of United States coins.

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* See *Hill Caves of Yucatan*. By Henry C. Mercer. Philadelphia, 1896.

Mr. Cornelius Stevenson, of the committee on the sale of the property at Twenty-first and Pine Streets, reported that the sale had been completed; and at his request the committee was discharged.

The Treasurer, Mr. Harry Rogers, made a report, showing a balance on hand of $710.57. Mr. Franklin Platt and Mr. Charles D. Clark were appointed a committee to audit the Treasurer's accounts.

October 3d, 1895.

Mr. Carl Edelheim exhibited the contents of a burial urn from Hungary, consisting of bronze ornaments and glass and amber beads. One of the objects was a bracelet terminating at one end in a hand and at the other in a phallus. Mr. Cushing spoke of the significance of the same combination of symbols in America, where among the Pueblos a similar ornament is worn by women who have borne children.

Prof. Maxwell Sommerville exhibited an interesting Hindoo ring.

The Curator of Numismatics, Mr. F. D. Langenheim, reported that the catalogue of the Society's coins in Memorial Hall had been completed, comprising 4,119 coins and 281 pieces of paper money. A copy of the catalogue was exhibited by the Curator. He read a letter from Mr. Dalton Dorr, requesting the Society to appoint a day for a private view of its collections.

November 7th, 1895.

Vice-President Maxwell Sommerville exhibited a series of photographs of Chinese laborers, obtained from a factor at Singapore. Various types were represented. Each man was photographed with his name written in Chinese characters on a slip of paper pinned on his blouse. Copies of the printed contracts between the employers and laborers were also shown, one in Chinese and another in English. The term of service is for three years. An advance of thirty dollars is made by the em-

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ployer. Prof. Sommerville also related a number of interesting incidents of his recent travels in Eastern Asia.

The Curator of Numismatics, Mr. F. D. Langenheim, reported that he had secured a proof set of the United States coins of 1895; and that in the Society's coin collection there were 921 duplicates, many of no numismatic value. Also, that Mr. J. Sergeant Price kindly gives the Society permission to use the dies from which the medal presented to the Society by his late father was struck. There is no copy of the Price medal in the collection of the Society at Memorial Hall. The Curator requested that the Society fix a day to visit the collection at Memorial Hall and make the formal transfer. The matter was referred to the officers of the Society with power to act.

Messrs. Franklin Platt, Cornelius Stevenson, and Westcott Bailey were appointed a committee to nominate candidates for officers and standing committees for the annual election at the next meeting.

December 5th, 1895.

The President, Dr. D. G. Brinton, spoke of Mayan pottery, and said it may be considered to be the most perfect work of any primitive American potters. A comparative study of Central American pottery reveals the essential identity of the pottery of Coban, in Guatemala, with that of Copan, in Honduras, and that of Palenque, in Tobasco; an identity that extends through all the pottery of the region from Honduras on the east to Tobasco and Chiapas on the west. This pottery is clearly different from the Mayan pottery of Yucatan. The Mayas did not begin their history in Yucatan. Mr. Mercer's observations show conclusively that they were the first people to enter the country. Their pottery supplies proofs of their independent development in the peninsula, and bears out the Maya tradition; and equally accords with Mr. Mercer's observations. In illustration, President Brinton exhibited a number of pictures and some unpublished photographs of Mayan pottery in several European museums, as well as two jars from the Archæological Museum of the University of Pennsylvania. One, a painted vase from Huehuetenango, he said, was the finest specimen of American pottery in existence, a conclusion he had arrived at after a careful study of the collections of the Museums of the Trocadero at Paris, the British Museum, the Leyden Museum, and the Peabody Museum at Cambridge. The other vase bears incised ornaments, and ranks as the most important known specimen of its kind.

Prof. Maxwell Sommerville exhibited a series of heart-shaped ornaments worn by women in Southern India, with photographs of native women wearing the ornament both as costume and decoration. The specimens were of various materials: base metal set with plates of colored glass, and one of gold, with designs in high relief.

Mr. Carl Edelheim exhibited some interesting personal ornaments, including a marble cameo from Pompeii, and two silver gilt peasant-rings from Altenburg.

He spoke also of the bust of the Emperor Hadrian in the University Museum.

Mr. Westcott Bailey exhibited a fresh-water pearl of great beauty and extremely curious from Wisconsin.

Mr. Henry Iüngerich exhibited a Roman lamp obtained from the excavations conducted by the Emperor Napoleon in Rome in 1860; and a curious modern lamp with religious emblems, the precise use of which has not been definitely ascertained.

Mr. Culin spoke of the Corean alphabet, suggesting a probable origin for it in the counting sticks used in Eastern Asia for arithmetical operations. The alphabet seems to be a direct invention and of remarkable simplicity.

The Curator of Numismatics, Mr. F. D. Langenheim, laid the catalogue of its coins before the Society.

It was voted to accept Mr. Dalton Dorr's invitation to visit the coin collection at Memorial Hall at 3 P. M., Saturday, December 14th.

The nominating committee reported a list of candidates for officers and standing committees for the coming year. The whole list were elected, as well as the still-living Honorary Vice-Presidents of 1895. (See page 9.)

1896.

JANUARY 2D.

The President, Dr. D. G. Brinton, delivered his annual address, taking for his subject, "The Results of Recent Digging," and referring to the most important excavations that have been made during the past year in various parts of the world. In Egypt, Mr. Flinders-Petrie, from January to March, discovered a new race, which he considers to belong to the time from about the seventh to the tenth dynasties. This people introduced an entirely new civilization into the Nile Valley, equal in many respects to what they found there; a people less developed in some ways and higher in others than the Egyptians. They excelled in stone working, as shown in their sickles, chipped and polished down to a fine edge, almost like those we are accustomed to see of iron. They did not, however, have the architecture or the architectural tendencies of the Egyptians. They appear to have finally died out, or been absorbed. Mr. Petrie has suggested that they came from the land of the west, and has identified them with the Berbers, the Numidians, and Libyans of ancient times.

Dr. Brinton then spoke of the latest explorations at Troy. Dr. Schliemann did not live to complete his investigations. Through the generosity of his widow and of certain German scholars, excavations have been continued through the past year by Dr. Dörpfield. They prove that Dr. Schliemann was mistaken in some of his conclusions regarding Troy. He regarded the second city as the Homeric one; but these later explorations show it was the fourth city that was the Troy of the epic, a city, indeed, much larger than Dr. Schliemann had any idea of. It may now be seen that Troy was contemporary with Argos, Mycenæ, and Tiryns, and was destroyed about the time that Homer and the others claim for it, and that it was destroyed by tribes sweeping down from the north, and that the Trojan war was but a mere episode in that migration.

Turning to Babylonia, Dr. Brinton said the investigations of the Department of Archæology of the University of Pennsylvania had made what may be regarded as the leading discovery of the past year in Assyria. He referred to the excavations at Niffer, an ancient city southeast of the site of the city of Babylon. A year or so ago, the cylinders seemed to indicate that the explorers had reached the site of the First Sargon, 3500 to 3700 B. C. They then came upon a solid pavement, upon which were placed the foundations of the temple of Sargon. Last year, on digging through that pavement, another city was found, in which the cylinders found carry back recorded history 500 to 700 years further; so that we can now trace Babylonian history to 4300 or 4500 B. C.

As to digging in the New World, the Mexican government made a series of investigations at Teotihuacan, at the suggestion of some Mexican antiquaries, and with a desire to provide something of special interest for the Congress of Americanists held at Mexico last autumn by the invitation of that government. The Teotihuacan ruins are regarded as the most extensive and most remarkable in America. There are two pyramids, one of the Sun and one of the Moon, as they are called. On digging alongside of one of them, it was found, instead of having its base close at hand, to extend far beneath the present surface of the ground. The sides exposed by the digging were found to be covered with stucco and painted with symbolic designs in brilliant colors. According to Prof. Frederick Starr, of Chicago, a great mass of earth appears to have been deposited around the pyramid by the hand of man. We have here another buried city, surpassing in extent the wildest fancy.

Again, at Chama, in northeastern Guatemala, a coffee-planter from Hamburg, named Dieseldorf, has been examining the many mounds of that district. Some of the results of his work were brought before the Society at the last meeting. He discovered remains of a people of the highest type, including a number of painted vases now in the Berlin Museum.

Finally, in Yucatan, the work carried on by Mr. Henry C. Mercer, at great personal sacrifices of time and health, have results of great importance in the line of history. He has clearly established that the Mayas brought their culture to the peninsula; but it is not yet certain that he found the culture layers of the earliest man that existed in Yucatan.

Mr. John T. Morris exhibited a beautiful funeral statuette of an Egyptian mummy, made of painted wood, with a receptacle at the back in which a papyrus had been placed.

Mr. Culin argued that, from analogues in Chinese culture, where wooden idols have a similar receptacle at the back for Sanscrit or old Chinese sacred and magical writings, inserted in order to vitalize the images, we may conclude the use of the "papyrus case," so called, had originally a similar purpose.

Mr. Morris also gave an account of observations in Egypt during his recent visit. At Luxor, a small steam engine was seen. Some said it was to be used in pumping out the lake, for the recovery of treasures of great value believed to have been thrown into it by the ancient Egyptians. Others declared the pumping was to prevent the destruction of the ruins of Karnak by gradual undermining. The greatest effort is made to preserve the columns by digging trenches around them; but so far without success. The ruins of Egypt, he said, are generally in fine condition. At Thebes, the rubbish is getting removed. The excavations are protected from intrusion, and no photographs are allowed to be made. He also exhibited a beautiful funeral case of terra-cotta, with two cartouches; likewise, two very beautiful and perfect molds for the glazed green porcelain images, of which he showed a remarkable specimen.

Mr. Henry Iüngerich exhibited a miniature of Washington, that had an authentic history for at least sixty years.

Prof. Maxwell Sommerville exhibited two very large and perfect spear-heads of green bottle glass, made by the aborigines of northern Australia; also, an object of carved stone (Fig. 4) found

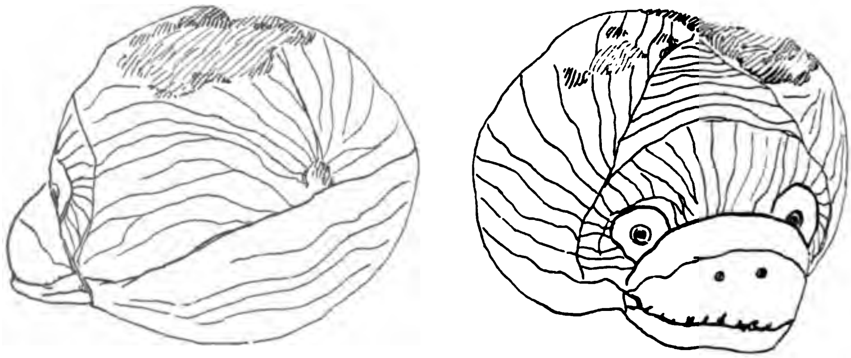

Fig. 4.

on the banks of the Delaware, on the New Jersey side, below Montague, the occasion of a lively discussion. It was a natural stone of rounded form, apparently a nodule of the carbonate of iron. It was carved with fine lines into the representation of an animal, perhaps a tortoise, or possibly a beaver, or otter. The head, with eyes, nostrils, and teeth, was clearly defined.

President Brinton congratulated the Society on the admirable arrangement of its coins now displayed at Memorial Hall. He said that on the 14th of December, 1895, the collection was opened with a formal ceremony, and that the President had made an address and the President of the Pennsylvania Museum had responded. The arrangement of the coins had been effected by the devoted labors of the Curator of Numismatics, Mr. F. D. Langenheim, of the Director of the Pennsylvania Museum, Mr. Dalton Dorr, and of Mr. H. M. Wilder, upon whom had devolved the work of identification and cataloguing.

Special thanks were voted to each of those three.

FEBRUARY 6TH, 1896.

The President, Dr. D. G. Brinton, spoke of prehistoric metal work. It is generally accepted that the earliest use of metals was not one invention or discovery. The first metal that appears to have attracted the attention of man was copper. That was especially true in the New World. The Indians of this vicinity obtained their copper from northern New Jersey. They did not, however, know how to smelt or fuse it; nor has a single implement of smelted metal been found among any tribe within the United States or northward. It is doubtful whether we can rightly speak of any of them as in the metal age. The art of smelting was known in Mexico, Central America, and Peru. It is probably an error to suppose that the art of smelting copper was introduced from Peru into those more northern countries. The use of the precious metals was also known in Mexico and Peru. There are few instances of the use of iron in America, either for ornament or for weapons.

The use of bronze began in Western Europe about 1500 B. C. It was known in Egypt 3000 to 4000 B. C. It was known in Eastern Africa from time immemorial; but there was a prejudice against it and it was not common. Bronze continued to be used in Europe until 700 or 800 B. C. as the usual material for weapons.

The cemetery of Hallstadt, ranging from 800 to 300 B. C., gives us a chronicle of the introduction of metals. Iron was introduced into Eastern Europe, Central Europe, and Egypt about 700 or 800 B. C. There is no evidence to show whence it was introduced; but with its coming we find the beginning of that great movement of which the founding of the city of Rome was a part. The Assyrian mounds show perfectly pure copper, which, it has been decided, came from the Caucasus.

Mr. Cornelius Stevenson exhibited three pieces of tilting armor of the last half of the sixteenth century: a volant-piece, a shoulder-piece, and an elbow-piece. He said they were used over the armor used in war. In the fifteenth century the tilting armor was made by itself. He described the combats, and said the knights always broke their lances, as a matter of course, and were almost invariably unhorsed. The sword was blunt and made of wood, and the mace was likewise of wood. If the combatants were not unhorsed they continued the fight with those weapons. They never struck below the chest. Before the middle of the fifteenth century there are no tilting suits. It is thought they tilted then in ordinary armor.

Prof. Maxwell Sommerville exhibited a marble representation of a lingam from India.

Mr. Culin exhibited a prehistoric tube (Plate XIII) made from a bone of the llama, from Tiahuanaco, Bolivia, a specimen collected by Dr. Max Uhle for the University Museum. Mr. Culin suggested that its shape seemed to indicate that it had been used for blowing snuff or tobacco smoke.*

The Treasurer, Mr. Harry Rogers, presented his report for the year 1895, showing a balance of $604.64.

MARCH 5TH, 1896.

Mr. F. D. Langenheim read the following translation from the *Gartenlaube* concerning a coin in the Hockley Collection (No. 1566, Case No. 164.5^2), at Memorial Hall:

"At the close of the Thirty Years' War (1650) a monster peace celebration was held in Nuremberg. It was then that a practical joker perpetrated the following: He caused a rumor to be cir-

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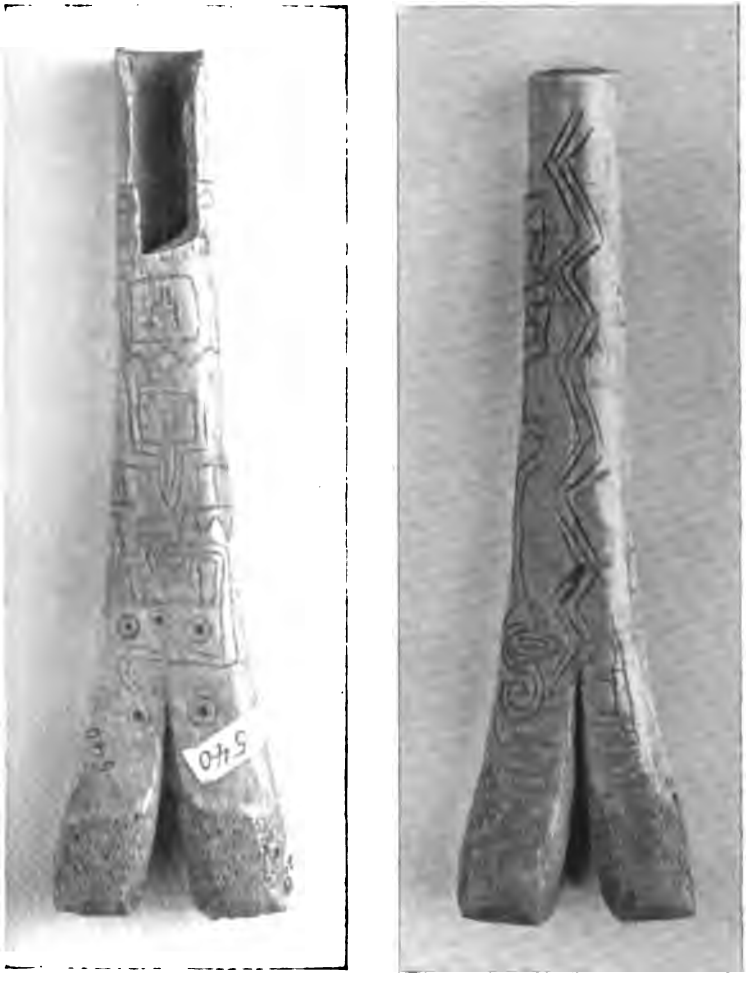
* See M. Uhle, *Bulletin of Free Museum of Science and Art*, University of Pennsylvania, Vol. I, No. 4.



Bolivian Prehistoric Snuffing Tube.

culated in the city that on the following Sunday the Imperial Commander, the Duke Amalfi (Octavius Piccolomini), would give each lad who came to his (the Duke's) quarters, mounted on a hobby-horse, one of the so-called Peace Pfennigs (pennies). The effect of this may be imagined. From all the alleys, lanes, and by-roads of the city there came squadrons of boys mounted on hobby-horses, having only one object in view. The wooden horses neighed, and made such a noise, that the Duke hurried to the window, and there first learned the state of affairs.

"He quieted the boys with the assurance that if they came on the following Sunday, in the same manner as they had come on that day, he would attend to them. They not only came, but brought many more with them. A whole army came, fierce and defiant, and occupied in the effort to control the untamed steeds. Nuremberg was at that time the only place where such a demand for hobby-horses could have been supplied.

"The Duke presented each lad with a square silver pfennig, which he had caused to be struck with the effigy of one of the daring horsemen, as the cut shows. Contented, the mass withdrew, for a long time filling the city with their joyful shouts."—*Gartenlaube*, No. 17, 1892.

Mr. Carl Edelheim exhibited a series of Siamese coins, and presented one of them that was lacking to the Society's collection. He exhibited a Chinese gold ring with an engraved design in relief; a Japanese gold ring; a silver ring of the sixteenth century from South Germany, and another from the same place of the early seventeenth century, bearing a Madonna and child with winged angels on either side in relief.

Mr. Culin exhibited a small curved stone of polished jasper, pierced with two holes, from an Indian grave in Orange County, Florida.

Prof. Maxwell Sommerville exhibited a copper spoon used in making offerings to the gods, in India.

Mr. Charles E. Dana exhibited a pair of bellows used in the sixteenth century by ladies in powdering their hair; an Egyptian lock; a stone celt in an antler haft; a curious plumb-bob; and an old metal seal. Also, a tortoise-shell cane, captured by his father in Mexico from General Santa Ana.

It was voted that the Curator of Numismatics be authorized to transfer 91 coins to the American Philosophical Society in lieu of those which have been misplaced.

April 2d, 1896.

The death was announced of Prof. Joseph Jones, M. D., Honorary Vice-President of the Society for Louisiana, February 17th, 1896.

The President, Dr. D. G. Brinton, said that Dr. Jones occupied a chair in the Tulane University. The part of his work that came especially within the field of this Society was on the archæology of Tennessee. The Smithsonian Institution published his memoir entitled *The Antiquities of Tennessee*, containing a careful investigation of the stone graves of Tennessee. In it he raised the question, not yet settled, whether syphilis existed in America before the Discovery, basing his conclusions on the lesions of the bones found in the Tennessee graves.

The death was announced of Francis C. Macauley, Corresponding Member, at Naples, Italy, on March 16th, in the fifty-second year of his age.

President Brinton said that Mr. Macauley was deeply interested in the subjects studied by our Society. He was practically the founder of the Archæological Association of the University of Pennsylvania.

President Brinton spoke of the so-called copper age in Europe, which has been assumed by some archæologists. The age of metal, he said, is divided into an age of bronze and an age of iron. The theory of a copper age, anterior to the bronze age, has been brought forward, and at present European archæologists are inclined to accept it. The theory is based upon the discovery of a large number of objects of pure copper that have been found in Europe, and that are assumed to have preceded the bronze age. President Brinton dissented from this view, and pointed out that pure copper was valueless as a material for implements on account of its lack of hardness. Besides, in the very early Babylonian records, we find mention of the mixture of tin and copper to produce bronze for the weapons of the gods. He concluded from the evidence adduced that the copper age is an unnecessary and impossible one.

A question of Mr. Cornelius Stevenson led to a discussion on the antiquity and distribution of the sling. President Brinton said that no sling-stones, recognized as such, had been found among paleolithic remains; and he appealed to the members present to verify his assertion from their own knowledge. He said there was no instance of the use of the sling among American tribes north of Mexico.

Mr. Culin said that sling-stones and a fragment of leather, thought to be a portion of a sling, had been identified by Mr. Cushing in the Cliff Dweller Collection from Mancos Cañon, Colorado, in the University Museum.

Mr. John T. Morris spoke of the use of the sling in Egypt by the boys, to scare birds from the grain fields. Their slings are extremely well made. He had observed them on a former visit; but last winter could see none of them.

Mr. Culin mentioned the bolas in the collection recently received by the University Museum from Dr. Max Uhle, who is collecting in Peru and Bolivia. They consist of three balls fastened with rawhide thongs. Although one such implement was obtained from a grave and was, doubtless, of considerable antiquity, it was still a practicable weapon. Another had one ball of stone with two others of wood.

Mr. Culin spoke also of additional collections made by Dr. Uhle at and near Tiahuanuco. Eighteen boxes, his last consignment, have just been opened at the University. They contained many objects of extreme beauty and interest; among them, two ceremonial tablets of slate were exhibited by Mr. Culin. One, perfect, bore a face surrounded by rays, like the sun, in a rectangular depression on the surface of the tablet. It was further ornamented with small beads of copper inserted in the stone. The other tablet was one-half of a similar object.

Mr. John T. Morris exhibited an old tenon (for a mortise) inscribed with a cartouche, once used to fasten stones together in an Egyptian temple; also a carved wooden leg of a chair or throne, the lower part representing a human figure; also a box of painted wood containing a number of painted wooden statuettes. He said they were images of children who died in infancy.

Mr. Charles E. Dana exhibited two very beautiful silver coins of ancient Syracuse, and a silver coin of the Ptolemies, which he had had mounted in a gold setting at Rome.

Mr. F. D. Langenheim presented to the Society's cabinet a medal struck to commemorate the twenty-fifth anniversary of the siege of Metz, made of cannon captured from the French. The proceeds of the sale of the medal go to a fund to decorate the graves of the soldiers.

The Curator of Numismatics, Mr. F. D. Langenheim, reported that he had made over 61 coins to the American Philosophical Society, instead of 91, since the remainder had been made up from the triplicate pieces.

President Brinton said he could not allow the occasion to pass without calling the Society's attention to the obligations it was under to its Curator of Numismatics in having successfully arranged the matter of the coins to the satisfaction of all those interested; and he cordially congratulated Mr. Langenheim.

The Chairman of the Publication Committee urged the desirableness of an early publication of the Society's Proceedings for the years 1892-95; and on his motion it was voted to appropriate $150 for the purpose, provided $100 in addition be raised by private subscription. The Publication Committee was then authorized to prepare the Proceedings of the Society from 1892 to 1895 for publication.

MAY 7TH, 1896.

The death was announced of Hamilton Disston, a Resident Member, April 30th, 1896.

The President, Dr. D. G. Brinton, exhibited the second part of Volume I of Prof. Hermann V. Hilprecht's *Old Babylonian Inscriptions*, and paid a high tribute to the importance of this valuable contribution to our knowledge of the early Babylonian inscriptions.

Mr. F. D. Langenheim exhibited a silver medal struck to commemorate the marriage of William II, Prince of Orange, and Princess Mary of England, May 12th, 1641, parents of William III, of England.

Mr. Henry Iüngerich said he had an opportunity to purchase a quantity of American half-cents for the Society's collection at a nominal price. The purchase was authorized.

OCTOBER 1ST, 1896.

The death was announced of Lewis A. Scott, of Philadelphia, Vice-President of the Society, on August 11th, 1896, in his 78th year; of Dr. G. Brown Goode, Honorary Vice-President for the District of Columbia, on September 6th, 1896; of Abel Hovelacque, of Paris, Corresponding Member; and of Isaac F. Wood, of New York, Corresponding Member.

The President, Dr. D. G. Brinton, spoke warmly in praise of Mr. Scott, and of the lamented Dr. Goode. Abel Hovelacque, he said, was a man of extraordinary powers. He died comparatively young. His studies were linguistics and sociology. In sociology he made his most conspicuous mark. An avowed extremist, he took great pride in his position, and risked the sacrifice of all he might have had. He was a determined opponent of the government and an avowed and extreme atheist. He did not excite the enmity of those with whom he was thrown in contact. He was a member of the Municipal Council of the City of Paris.

President Brinton described an emblematic mound in Canada, The particulars had been communicated to him by Mr. David Boyle, the Curator of the Museum of Archæology of Toronto. The mound is in the form of a serpent; sixty feet long, eight feet across, and three feet high. The mouth was apparently open, and in front there was an oval object usually described as an egg. The discovery is without parallel so far north; although a mound exists just north of the Detroit River, not far from it. Some ethnologists attribute the construction of the mounds to the Dakotas, of the Siouan stock. According to Miss Alice C. Fletcher, they still make small mounds in front of the tepee to indicate the totem of the owner. Emblematic mounds are not confined to America, but are found in certain parts of the Old World. A French engineer described a serpent mound on the top of a flat mountain in Algeria. Mounds also occur in Australia. At the initiation of youths, a ceremony called the Bora, they threw themselves outstretched on the ground. They made a mound representing a man stretched out in this manner as a memorial of the Bora. That leads to the inquiry whether the American mounds were not likewise connected with the initiation into the gens.

Mr. Henry C. Mercer made some observations on the turkey, maize and tobacco, which the Turk, curiously enough, seems to get credit for, although all are originally American. In reference to tobacco, however, he questioned whether smoking may not have originated independently in the far East.

President Brinton answered that, so far as China is concerned, Dr. Schlegel has shown that all words connected with smoking are modern adaptations; and that tobacco was unknown until 1650, when it was introduced from Europe. Dr. Brinton traced the origin of the pipe to the tube used by the Indian medicine man to blow upon his patient. The Indians regard the soul as akin to the breath. When a man is sick and liable to die the medicine man is called in to blow upon him. In the Mayan language the very word for medicine-man is "the blower." The tubes found throughout America were all used for this purpose. No doubt, the addition of smoke, which made the breath visible, came later. The use of tobacco probably arose as a pure accident. The Indian smokes by inhalation into the lungs, producing a prompt and definite narcotic influence, the object being to bring about a condition of communion with the gods. They by no means confined themselves to tobacco: the stramonium, "jimson weed," was smoked throughout America. A powerful narcotic, it brought about a state of anæsthesia. The snake plant, and allied species, also narcotic, were used; and in Caliornia a kind of fungus, which gives rise to visions.

Mr. Inman Horner exhibited a double crown of Nuremberg; and Mr. Culin, the gold medal of the Cotton States and International Exposition ,at Atlanta, Georgia.

The medal and diploma awarded to the Society at the World's Columbian Exposition was formally presented. The award read as follows:

"I. Collection of American paper money. This collection consists of a series of notes from the year 1800 to 1863, which were issued by State and private banks, individuals, and corporations in the United States, many of which are from Virginia, Maryland, Delaware, Massachusetts, Mississippi, the Carolinas, Florida, Georgia, Alabama, and from the old Bank of Philadelphia. It also contains a complete collection of postal currency, issued by the United States government during the late war. It may be regarded as an interesting contribution to the financial history of the country, forming a link between the paper money of the Colonial and Continental epochs and that of the greenbacks and notes of the present time. The collection is admirably arranged and mounted in suitable frames, thus forming a handsome, interesting, and valuable collection.

"II. Collection of American historical medals. The series is formed of Washington medals; ecclesiastic and collegiate medals; military, civic and political medals, and medallic portraits of Americans, many of which are commemorative of interesting and important events in American history; also, medals of famous Americans, societies, and corporations. The Washington medals are exceptionally noteworthy, comprising many of the most famous specimens. This collection, together with that of the American paper money, exhibited by the same Society, formed a part of the exhibit of the United States National Museum at Madrid, Spain, in 1892. The collection has been admirably arranged, and is a valuable, instructive, and highly interesting exhibit. [Signed] Virginia Campbell Thompson, Individual Judge; W. F. Terry, President, Department Committee."

The Treasurer, Mr. Harry Rogers, presented his report, showing a balance of $752.05.

Mr. Westcott Bailey, of the Market Street Bridge Monument Committee, reported that the City Council had taken no action in regard to it.

NOVEMBER 5TH, 1896.

Col. Richard S. Edwards, a visitor, read a paper on "A Proposed Medal for the Philadelphia Post-Office," as follows:

A PROPOSED MEDAL FOR THE PHILADELPHIA POST-OFFICE.

BY RICHARD S. EDWARDS.

To enable you to understand the causes that brought about the existence of the medal, it may be well to outline briefly some part of the organization of the postal service in this city. You are all familiar with the main or central Post-Office at Ninth and Chestnut Streets, where the Postmaster and his administrative staff are situated, and where a general postal business is transacted. But there are also twenty-five branch post-offices, or sub-stations, scattered through the city, as far as possible in the centres of population of their respective districts. They are free-delivery offices, that is, with letter-carriers attached; and at each a regular postal business is carried on, letters are received and delivered within the district, postage stamps, postal cards, and stamped envelopes are sold, domestic and international money orders are issued and paid, and mail matter is registered. There are, besides, thirty-six receiving stations, where letters are received but not delivered, stamps, cards, and envelopes sold, mail matter registered, and domestic money-orders issued and paid; and at two of them international money orders, also, are paid and issued. Then, again, there are 146 stamp agencies, where stamps, envelopes, and cards are sold; making in all, including the central office, 208 offices embraced within the Philadelphia Postal District.

At some of the offices a very large business is transacted. At one receiving station, No. 20, in the Bourse Building, the sum received for the sale of stamps, envelopes, and cards for the year ending December 31st, 1896, amounted to $682,000. The twenty-five free delivery sub-postoffices have each a Superintendent and from one to sixty-eight letter-carriers, and from one to twenty-one clerks; with receipts from $440 to $114,113 a year. Evidently, these offices are a most important part of the postal system; and upon their good or indifferent work under their Superintendents depends in great measure the effectiveness of the whole postal system.

The present Postmaster of Philadelphia, Mr. Wm. Wilkins

Carr, has originated many reforms, improvements, and incentives to effort, but none, in my opinion, of more practical value than the plan he devised of inciting competition among the Superintendents of the twenty-five sub-stations by offering a prize to the one having the best record of management for the period from April 1st to December 31st, 1896. He decided that this prize shoud be in the nature of a token or medal that could be worn on the breast; and he appointed a committee from among the officials of the office to secure and adopt a design and have it carried into execution.

The committee, or, at least, the major part of it, was of the opinion that neither collectively nor individually did it possess any knowledge of numismatics; nor at first did it see its way very clearly, how it was to set about adopting a design for a medal without a greater knowledge of the subject. But the first step was not difficult; and designs were invited from the various business people of the city who profess to do that kind of work. A number of designs were received; but none were satisfactory. They had, however, one good effect; for they led the committee to a very clear knowledge of what was not wanted. This, though a negative condition, was a step in the right direction. It was finally determined that the prize should be in the form of a medal, and that it should symbolize the United States, the Postal Service, and the City of Philadelphia; and again designs were invited on the basis of this suggestion.

Of course, the letter-carrier was the most prominent figure among the designs sent in. For, to those unconnected with the postal service, the letter-carrier is always its representative; because he alone comes daily in contact with the public, and his gray uniform and leather satchel seem to them the visible embodiment of the whole postal service. But the fact is that, were it not for the army of faithful clerks behind the office walls, never seen nor, perhaps, heard of by the general public, though working day and night to arrange the mail in such shape that the carriers may deliver it, this later addition to the postal service, the letter-carrier, would be of no avail whatever. But here a new difficulty presented itself. Should a figure or representation of the carrier, or the railway mail clerk, or the collector, or the caser, or of any other one, or even of a reasonable number of those engaged in the different parts of the postal work, be selected, it would emphasize that branch or those branches, to the exclusion of the others; and that would manifestly be inconsistent with the idea of symbolizing the Postal Service, and not a part or parts of it. It was then determined to do away with personal representatives entirely.

While this matter was under discussion, it was discovered that one member of the committee not only possessed a knowledge of numismatics, but a very complete and thorough knowledge of it—his modesty having heretofore prevented him from disclosing that fact. It was suggested to him that he should use the national colors to represent the United States, a mail-bag for the postal service, and the Liberty Bell for the city of Philadelphia. He intimated that he might be able so to group them as to be of value as a suggestion to a professional designer. He first produced the crude design, shown with the medals; and it seemed to have so much merit that he was asked to work it out in detail and finish. As a result, the finished design, also submitted for inspection this evening, was unanimously adopted. The work was done by Mr. John B. Walters, Superintendent of Station A, at Eighteenth and Chestnut Streets; and for originality of conception, and accuracy and neatness of detail, it was, in the opinion of the committee, superior to all the designs submitted by a number of those regularly engaged in such business.

The idea of offering these medals was original with the Postmaster, and all the expense of making them was paid by him.

The medals are made from twenty-dollar gold pieces, alloyed with enough additional copper and silver, in equal weights, to reduce the gold to fourteen carats. The device is a mail-bag and the Liberty Bell on a colored ground enamelled with the national colors. The wreath upon them was carved by hand, and the laurel branches represent victory, and the oak branches strength. The mail-bag was struck up with a steel die, and is of solid gold, satin finished, and colored to represent leather. The Liberty Bell, also struck up with a steel die, is of sterling silver, and oxidized, and fastened by revels.

Col. Edwards then exhibited the three medals to be awarded in January, 1897; and they were commented on by the Society, and a discussion ensued as to the devices used to mark the post-office in other countries.

Col. Edwards referred to a diminutive post-bag used in England.

Mr. Chas. E. Dana said that generally in Europe, as, for example, in Germany, a small horn was used. He objected that the colors, red, white, and blue on the medals were not distinctively symbolic of the United States.

Col. Edwards exhibited a small medallion containing a picture of a bird, apparently executed in feathers; and Hindoo miniatures from Agra.

Mr. Cornelius Stevenson exhibited a sword intended for use in defending fortifications, with a blade about four feet long, that slips from the end of an iron scabbard of equal length. He said it was of the sixteenth century.

Mr. Culin exhibited a collection of phallic amulets intended to ward off evil influences.

Mr. Inman Horner exhibited and presented to the Society two Japanese postage stamps, for two and five sen, issued this year in commemoration of His Imperial Highness, Prince Kitashirakawa, lately deceased, and bearing his portrait.

Messrs. Franklin Platt, Westcott Bailey, and Inman Horner were appointed a committee to nominate officers and standing committees for the annual election at the next meeting.

DECEMBER 3D, 1896.

Mr. Culin said that his examination of certain phases of American aboriginal culture had convinced him that they showed a distinct decline, unless the early explorers or more recent observers had given misleading accounts. Or, on the other hand, the customs referred to must be regarded as reflections from a higher civilization.

The President, Dr. D. G. Brinton, summarized the evidence as to the degeneration of the Indians; and said the question was one that had occupied the attention of students, was extremely intricate, and was not to be decided affirmatively without careful consideration. At the same time, there were evidences of degeneration, both from archæological sources and in the traditions. Thus, in Yucatan, the Mayas told the earliest explorers that since the destruction of Mayapan there had been a condition of anarchy in the peninsula. Again, in Mexico is found the cemetery of Teotihuacan, the grandest ruin on the American continent, deserted and in ruins at the time of the Discovery, and vaguely attributed by the Aztecs to a race called the Toltecs. At Titicaca, in Peru, where Squier declares the stone work is unparalleled in any of the remains of Greek and Roman cities, the earliest European visitor, Cieza de Leon, found no traces of the builders; and the Indians told him that giants had once lived there. In the Ohio Valley, a country neither cultivated nor inhabited when the first white man came there, it is known there once existed a great and prosperous culture. Images almost as striking and beautiful as the famous figurines of Tanagra have been dug from the Ohio mounds, showing an artistic sentiment little removed from that of the Greeks. In all those areas there had been a culture much superior to what was found at the Discovery. Nevertheless, reasons cannot be assigned, nor can we speak of degeneracy, except in the case of Yucatan. The problem is yet unexplained, and yet unexplainable.

Mr. Inman Horner spoke of the parallel presented in Central Asia. East of the Caspian, the plain was inhabited by wandering Khirgiz, where tombs and remnants of palaces occur, built of hewn stones. All that had been said of America, he urged, would apply equally well to Central Asia.

Mr. John T. Morris called attention to the curious fact that Baalbec, with its remarkable temple, had not been mentioned in the Bible.

Mr. Horner offered the explanation that the ascendancy of Baalbec, like that of Palmyra, was commercial rather than political. Its position for a time on the great caravan route gave it temporary importance, and the piety of its rich merchants took the form of erecting columns and colonnades; but it was never a seat of empire.

Mr. Culin exhibited a series of very beautiful silver coins of the Republic of Venice, recently received by the Archæological Museum of the University of Pennsylvania from the estate of the late Francis C. Macauley. Among them were the coins of Jac. Tiepolo, 1229-1249; Renier Zeno, 1252-1268; Jac. Dandolo, 1279-1287; and Fr. Dandolo, 1328-1339.

The committee on nominations of officers and standing committees for the coming year made its report, and the whole list was unanimously elected. (See page 10.)

1897.

JANUARY 7TH.

Mr. J. Edward Farnum, a visitor, spoke of Corean coins. Money in Corea, before Europeans came there, consisted only of a large brass coin, and another of one-fifth the weight of the larger one, both called "cash" by Europeans, and marked alike, dated with the dynasty and reign; but the two sizes are readily distinguished. These old coins were pretty, and not bad for a semi-civilized people; but have now been replaced by others, and have been in great part shipped abroad, and have become rare. There are still no gold nor silver coins. On the opening of the country to Americans and Europeans, the government called for bids from the Japanese for the manufacture of similar new coins. The contractor, however, made them very roughly, chiefly of iron, but with a little copper; and twice reduced the size. Twenty pounds of the new "cash" are worth four and a half silver dollars, and a string of these coins is worth about twelve cents. At length, by a bold stroke of debasement of the coin, the king decreed that the Coreans should accept one cash in lieu of five. Hence, in northern Corea 700 cash are worth one dollar; but in the south, owing to the less submissive character of the inhabitants, 3,500 cash are worth one dollar. The silver dollar, or Japanese yen, though in use at the treaty port of Genzan, was totally uncurrent, and its value in cash wholly unknown, even to hotel-keepers at a distance of only seven miles. To illustrate the buying power of the "cash," and at the same time the honesty of the Corean peasant, it was mentioned that a fine Mongolian pheasant was bought for four and a half cents' worth of the new coins; and then the seller ran a long distance after the purchaser to return two cash that, on careful counting, had been found to be in excess. Mr. Farnum presented to the Society a number of the coins, strung upon a cord of leather.

He had traveled across the country from Seoul to Genzan. He found the people physically very fine, averaging five feet ten inches in height, splendid men, brave and very strong. A porter, a picked man, to be sure, under promise of reward, carried a five-hundred pound bale of silk half a mile up hill. The ordinary load for a porter is one hundred pounds. But the race seems degenerate in civilization. The art of pottery is almost lost, and modern porcelain is rare; but pieces of porcelain five hundred years old are found.

Mr. Farnum had also traveled in Southeast Africa; and he exhibited a horn snuff-spoon from Zululand. The snuff is made from a narcotic weed, similar to Indian hemp, mixed with tobacco. He also exhibited a Manika-land carved snuff-bottle made of buffalo horn. The bottle is carried in a large hole made in the lobe of the ear; and that is the common way of carrying various small articles. He also exhibited two specimens of a wooden oblate-ellipsoidal, or decidedly flattened spheroidal, ball, about the size of a small apple, say two and a half inches in its larger diameter, somewhat carved and ornamented with colors; and considered by the native men of that part of Africa to be quite an indispensable, and for comfort, decency, and propriety the only essential article of dress, and thought requisite even when European dress is adopted. In the centre of one of the flattened sides of the spheroid there is a cavity about three-quarters of an inch in diameter and of about equal depth, slightly tapering inwards, said to be gauged by the size of the wearer's thumb. The ball is worn upon the end of the penis, and serves as a protection against injury in walking through the brush.

Mr. Inman Horner spoke of a similar custom in the Solomon Islands, where a shell is used in like manner.

Mr. John T. Morris spoke of the currency he had found in use in India. In addition to silver rupees, bank bills were used; but the Bombay bank bills were used only as far east as Allahabad, and were at a discount in Calcutta. He remarked upon the absence of gold coins as currency, and that even British sovereigns were not current.

Mr. Horner explained that, though gold was not current there as coin, and not, as silver is, legal tender, no more than diamonds and rubies, yet it could, doubtless, be sold to jewellers or goldsmiths. He cited Tavernier's experience in finding the native jewellers skilled at appreciating the adulteration of gold coins.

Mr. Farnum said he had been told in India that, for hoarding, the American twenty-dollar gold coin was preferred even to the British sovereign, and was taken at a premium of six per cent. The sovereign was not guaranteed full weight, and was more likely to be worn; while that American coin was always of full weight. Moreover, red gold was much preferred to yellow, and the Australian sovereign, more common in India, was very yellow.

Mr. Morris spoke of the gold mohur as not rare in India among hoarded coin, in 1890; and it was then easily procured, for example, by a certain physician, who ordinarily took a gold sovereign as a fee, but on a simple request could have a mohur instead. In 1895, however, Mr. Morris found the mohur had become very scarce.

Mr. Horner remarked that the importation of gold into India was considerable.

Mr. Morris spoke of the beauty of the silver rupee still coined at Lucknow.

Mr. Morris exhibited four specimens of the porcelain gambling counters of Siam, dating from about 1800; but whether in use now or not, he did not know.

Mr. Morris also exhibited a sacred mummified hawk from Luxor, Egypt.

Mr. F. D. Langenheim presented a white-metal medal commemorating a visit of several lodges of Philadelphia Free Masons to the City of Mexico in 1893, or thereabouts.

The Treasurer, Mr. Harry Rogers, reported on the finances of the Society, showing a balance of $741.10 on hand at the beginning of 1897.

Thanks were unanimously voted for Mr. Farnum's communications of this evening and for his gift of Corean coins.

FEBRUARY 4TH, 1897.

Mr. Culin read a letter from Thomas J. Collins, of Haddonfield, N. J., saying that Dr. R. C. Kendall, of Troy, Bradford County, Pa., has a stone phallus, one of two found along the creek bottom after a flood.

The President, Dr. D. G. Brinton, said that he knew of no aboriginal objects resembling phalli found on the Atlantic Coast, but that, on the other hand, they are extremely abundant in Central America.

After discussion, it was suggested that Mr. Culin communicate with Mr. Collins, and ask if the phallus could be submitted for the Society's inspection.

Mr. Lyman exhibited a Japanese sword recently presented to the Archæological Museum of the University by Dr. D. B. McCartee, of Tokio. It was presented to Dr. McCartee about twenty years ago, on his retirement from his professorship in the University at Tokio, by Mr. K. Takahashi, one of his pupils, a bright and faithful student, now Chief Secretary to the Cabinet of the Imperial Government, and formerly principal editor of the official gazette. Mr. Takahashi said the sword had been in his family for three hundred years. It looks old, and is worn quite narrow by repeated grinding. There is no inscription on the tang. The grooves of the blade run far along the tang, and the tang has three holes for the *mekugi* (or rivet that holds the hilt on), one of them very close to the outer end of the tang. The sword seems, therefore, to have been shortened from the length of a *katana* proper (30 to 33 inches) to that of an *ipponzashi* (single sword worn by tradesmen and farmers, and between the *katana* and *wakizashi* in length, or, say, about 25 inches long). The blade, owing to some exposure to dampness on the way from Japan, is at present much tarnished and rusty; so that it is difficult to judge of its quality.

Mr. Cornelius Stevenson exhibited the end of a pommel of a saddle of the sixteenth century. He described it as the piece fastened to the pommel.

President Brinton made a communication on the anthropological aspect of North Africa.

MARCH 4TH, 1897.

Mr. Charles E. Dana spoke of his efforts to investigate the seal of Penn's charter; and read a communication from the English Public Record Office, saying: "There are no impressions of the Privy Seal amongst the records relating to royal grants made in the reign of Charles II preserved in this office." The various stages gone through by letters-patent similar to Penn's were minutely described. "There is no trace," the letter said, "of the seal's having been pendant or affixed to the face of any of these documents." A dummy accompanying the papers showed the exact manner of affixing the seal. No examples appear to survive. Inquiry was made at the British Museum without result.

In the discussion that followed, Mr. G. Albert Lewis pointed out the amusing error of a seal of the reign of Victoria attached to the charter held in the hand of the new City Hall statue of Penn.

Mr. Dana said that the seal given in the frontispiece of *The Archives of Pennsylvania* as the one on the charter is really the great seal of the State of New York in the time of George II. He said that the arms of England change in almost every reign, and from any given arms the reign can generally be determined.

Mr. Inman Horner exhibited a valuable and perfect suit of Japanese armor lent by Mr. A. M. Hance. A discussion followed as to the origin of this peculiar defensive armor and its probable affinities with the bone plate armor of northern Japan and its possible origin therein.

President Brinton combated the view held by Prof. Otis T. Mason, that there was evidence of transference in the existence of this armor on both sides of Bering Straits, and said it might well have been an independent invention. Armor consisting of metal plates, interwoven with cords, occur in European defensive arms.

Mr. Cornelius Stevenson exhibited the following Japanese swords; a small *tantô*, originally a longer sword, cut down by regrinding, and supposed to be a Masamune; a *tachi* by Yukumitsu; a *katana*, with an exquisite lacquered scabbard, by Ikesada; a *tachi* by Yakemitsu.

Mr. Harry Rogers exhibited a number of specimens of American gold coinage, including a $2.50 and a $5.00 Bechtel piece of North Carolina, a private mint-piece of Baldwin & Co., a piece coined from the first Pike's Peak gold, etc.

Mr. Lyman exhibited a piece of Japanese rebel paper money, one yen, produced in 1877 in Kiushiu, made of blue starched cotton.

Mr. Culin exhibited several Japanese silver coins belonging to Mr. Emlen Meigs, together with a Japanese work in which the pieces were illustrated.

The Curator of Numismatics, Mr. F. D. Langenheim, reported that he had purchased the proof-set of United States coins for the current year, to be placed in the cabinet.

It was voted that the Committee on Numismatics report on the question of securing the mint medals.

April 1st, 1897.

Mr. John T. Morris exhibited two Japanese fire-locks, one inlaid with the badge of the Tokugawa family; and an old Indian fire-lock from Delhi.

Mr. Cornelius Stevenson exhibited a German fire-pistol for striking a light.

Mr. Culin exhibited a pair of boxing gauntlets embroidered with gold thread, used by Russian nobles in combats in the last century. With them there was a true cestus, capable of a fatal blow. The tops of the gauntlets were inlaid with red leather, and had a text stamped in gold letters around the edge.

Mr. Culin also exhibited an old copper horn, the property of Mr. Charles H. Bockius, to whom it had been given by a Jew about sixty years old. The Jew said it had been given to him by his grandfather, who called it an old Israelitish horn. It was pronounced to be an old German hunting horn.

May 6th, 1897.

The death of Justo Zaragosa, of Madrid, Corresponding Member, was announced.

Dr. Max Uhle, a visitor, exhibited and discussed a quipu that he had brought from Bolivia. It is said by von Tschudi that in the Puna of Bolivia quipus are still used in the way so important in ancient times, when it would not have been possible to administer the empire without them. Another finer specimen than the present one was sent by Dr. Uhle to Berlin from Challaai, the island in the southern side of Lake Titicaca. The quipus are now used by the Indians for rendering account to the owners of plantations (haciendas) concerning the product of the fields. The Indians do not like to show the quipus to the whites. The present specimen belonged to an Indian of Cutusuma, who had been an alcalde. At the close of the year he had to give account of the shepherds to the next following alcalde. On one side the sheep are represented. The knots are of different sizes, large and small. Three of them represent hundreds; eight are for tens; and seven small ones are for units; making in all 387. There is also a thread for keeping a separate account of sheep eaten. On another string the knots represent 285 sheep. The knots of another string show the number of increase of young animals, 85. On the quipu sent to Berlin the males were represented by knots in a brown string, and the females by knots in a white string. There were keepers of the quipus, who correspond to our bookkeepers, and who count them up to 100,000. The Indians, however, are now very poor, and though they probably know the use of the quipus from perfectly maintained traditions, they have too little property to require the use of them. (Dr. Uhle discusses the subject more fully in the *Bulletin* of the Museum of Science and Art, University of Pennsylvania, Vol. I, No. 2, Dec., 1897.)

He spoke also of the slings used by the Bolivian Indians. The designs on the cords of the slings differ according to the tribes. They always go about with the slings, and also use them in battle. On the second of December, at Santa Barbara, they go out and fight, and on one such occasion broke the bones of six men.

Mr. Lyman exhibited a recent pamphlet, *Decorations of Swords and Sword Furniture*, by Edward Gilbertson, with very interesting and beautiful illustrations of Japanese sword decorations.

Mr. Culin exhibited a Corean name tablet.*

OCTOBER 6TH, 1897.

The death was announced of Hon. J. Hammond Trumbull, Honorary Vice-President of the Society, for Connecticut, August 5th, 1897, aged 75 years; and of J. Sergeant Price, Vice-President, August 16th, 1897, aged 66 years; Achille Postalacca, of Athens, Greece, Corresponding Member (President of the Numismatic Society of Athens), died in 1897.

The President, Dr. D. G. Brinton, said Dr. J. Hammond Trumbull was one of the best bibliographers we had, one who devoted his whole life to the studies we are interested in; and he left one of the largest collections of books in existence in reference to the Algonquin languages. Mr. J. Sergeant Price, a son of the former President of our Society, always took an active interest in its welfare, and, whenever the Society desired to extend itself and asked for financial aid, was ready with assistance.

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* See *Bulletin of Free Museum of Science and Art*, Vol. I, No. 1.

Mr. Culin read a communication from Mr. Charles Laubach, of Riegelsville, Bucks Co., Pa., giving an account of the stove plates manufactured at Durham Furnace, Durham, Pa., from 1741 to 1789.

Iron stoves were unknown before 1678, when Prince Rupert, of England, attempted to convert a fireplace into a furnace. This was the first attempt to force smoke back over the fire and create heat for warming apartments by the aid of iron. Early in the eighteenth century, about 1710, Count Polignac, of France, made an attempt to convert an ordinary fireplace into a heating apparatus by simply constructing a fireplace with an iron back, hearth, and jambs. The result was only a slight saving of heat. In 1716 Dr. Desaguliers, of London, succeeded in improving the Polignac fireplace so that it could be used for burning coal.

The first attempt at manufacturing heating apparatus at Durham, Pa., was in 1741, by the Durham Furnace Company. The firm consisted of George Taylor (later one of the signers of the Declaration of Independence), James Logan and James Morgan, iron masters (the latter being the father of General Daniel Morgan, the hero of Cowpens).

The 1741 stove pattern was called the "Adam and Eve," from its embellishment. It was in the form of a box, two feet square, without side or oven doors, having merely one door in front to supply it with fuel and draft, and a hole on top to allow the escape of smoke. The stove was designed by its inventor to instruct as well as to supply comfort, having inscribed in raised characters the date 1741, surrounded with fine scroll work. Above this were raised figures representing Adam and Eve, the serpent, several fruit trees, and a variety of animals in the background. In 1745 Franklin invented the famous stove which bears his name. This pattern continued to be cast at the Durham Furnace until 1774, and probably later.

In 1756, when the furnace was leased and operated by Captain Flowers and James Morgan, a new design of stove was invented by the firm and cast at the furnace. The side plates were highly embellished with scroll work and the following inscription:

In 1774, when George Taylor, Samuel Williams, and James Morgan were the members of the firm operating the Durham Furnace, a new model of a stove was constructed with the inscription: "Durham Furnace, 1774." This was surrounded by a wealth of fine scroll work. A portion of a stove with the above inscription and the date thereon was for many years placed in a conspicuous position in front of the Easton, Pa., post-office.

In 1779 Richard Backhouse became proprietor of the Durham Iron Works. During the Revolution he supplied Washington's army with shot, cannon-balls, canister and grape. At the close of the war he commenced the manufacture of stills, steel wagon springs, stoves, and stovepipes, in addition to pig and bar iron. In 1785 he invented an improved ten-plate stove, constructed with stovepipe attachment, as at that time stovepipe was considered a luxury. In 1789 the Valentine Eckert pattern stove was largely cast here and at the Sally Ann Furnace, near Allentown, Pa. Captain Valentine Eckert, of Revolutionary fame, had, in the year 1789, a neat model of a stove constructed, which was largely cast at Durham and at the Allentown and Reading furnaces. The stove bore the inscription, "Valentine Eckert, Sally Ann Furnace," scroll work and the American eagle, carrying the motto "E Pluribus Unum" in its mouth. It is curious to note, according to the Durham Furnace ledgers, that the various stove patterns—Adam and Eve, 1741; Franklin, 1745; Philadelphia, 1755; Captain Flowers and Morgan, 1756; George Taylor, 1774; Mount Pleasant, 1780; Richard Backhouse, 1785; Captain Eckert, 1789, and Pettibone, 1781—were frequently exchanged among the various furnaces and forges in Pennsylvania and New Jersey, and cast at designated furnaces to supply the needs and tastes of the inhabitants of the surrounding region.

In the discussion that followed, Mr. Inman Horner referred to the furnace plates which it was customary to put on iron blast furnaces, giving the date of their erection; and said he hoped to exhibit such a plate at the next meeting of the Society.

President Brinton read a letter from a gentleman at Utica, N. Y., who asked for information about certain curved stone implements, and gave a sketch of three such objects from different parts of the United States. After discussion, it was concluded that such objects might have been used by the Indians as fish hooks, but that many are forgeries, created to meet the demands of collectors for relics of striking and unusual form.

Mr. Culin exhibited a copy of the *Galerie Américaine du Musée d'Ethnographie du Trocadéro*, Part I, recently presented to the Museum of Science and Art of the University of Pennsylvania by the Duke de Loubat.

President Brinton said that this very beautiful publication was due to the generosity of the Duke de Loubat, and was the work of Dr. E. T. Hamy, Member of the Institute, Conservator of the Ethnographical Museum of the Trocadéro. The French Government, about the time when Mexico was expected to become an ally of France, sent a number of collectors to that country, who obtained many superb antiquities, especially in the State of Chiapas. Those objects have remained in the Museum of the Trocadéro, unpublished and undisturbed for many years; until the Duke de Loubat came forward and defrayed the expense of this work. Dr. Brinton, however, had looked in vain in it for certain terra-cotta images with curved legs, which Dr. Hamy believes to show the influence of Buddhism in America. They are, however, "Lords of the Cycle." The work is a beautiful specimen of typography, and should be welcomed as a very important contribution. Dr. Brinton, when in Paris, met Mr. Pinart, by whom most of the specimens figured in the work were collected. He is a very accomplished Americanist. He has given to the town of Boulogne a collection from the northwest coast of America. Dr. Brinton visited the museum, and had the opportunity to see his very interesting and useful collection. It comprises a number of masks, more remarkable in some respects than those in the American Museum of Natural History, at New York. They are occasionally rude, and indicate an early period of art. There is also a large collection of spears and harpoons. Mr. Pinart was there in 1863 or 1864, before the active manufacture of "ancient" objects.

Mr. F. D. Langenheim exhibited two Victoria Jubilee medals, issued by private persons; a commemorative medal of the one hundredth birthday of William I, of Germany; and a commemorative medal of the eightieth birthday of Bismarck.

Mr. Culin exhibited three gold obans, and the Japanese Order of the Rising Sun, recently deposited in the Museum of Science and Art of the University of Pennsylvania by Mr. Joseph U. Crawford. They had been presented to him by the Japanese

Government in recognition of his work in building American railways in Japan.

NOVEMBER 4TH, 1897.

The death was announced of Justin Winsor, Corresponding Member, October 26th, 1897, aged 66.

Mr. Inman Horner spoke of the promise he made last month to exhibit a furnace plate at this meeting. He had in mind the Batstow furnace. He had since found at that furnace, instead of three plates as he expected, only a single plate, erected at the time of building the last furnace in 1836. The plate was a large cast iron one with a simple inscription in relief.

Mr. Culin exhibited a bowl or platter game of the Tobique (Amalecite) Indians, of New Brunswick, recently collected, and presented to the Museum of the University of Pennsylvania by Geo. E. Starr, Esq., of this city. The implements for the game consist of six discs of bone or antler (apparently bone), marked with star-like decorations on one side, a platter of maple wood, and four large counting sticks and fifty small ones. Mr. Culin was now prepared to maintain that the beaver-teeth game of the Indians of the valley of the Columbia River had been transmitted from the south, and was a transformation of the cane and staff game of the more southerly Indians. In fact, upon the evidence of the specimens he had now collected, he considered all the games in which objects were tossed like dice, among the American Indians, were derived from some common centre, somewhere in the southwest, approximately in Mexico.

Mr. F. H. Cushing spoke in agreement with Mr. Culin as to the significance of the evidence of the southern or southwestern origin of the game mentioned.

Mr. Inman Horner observed that the symbolism of the game raises a very deep question, as to whether there is any identity of religious belief in all parts of the country, a natural inference from the universal existence among the Indians of a divinatory game having the same symbols.

The President, Dr. D. G. Brinton, briefly opposed Mr. Culin's conclusions.

Mr. Culin also exhibited a wampum belt, made of old shell wampum strung upon cotton cord, likewise collected by Mr. Starr from the same woman of the Tobiques, along with the other objects. The belt was six strands wide, of 96 beads to a row, but was imperfect through the removal of several beads from five rows. In the centre there was a cross made of white beads. From comparison with pictures of wampum belts in the Trocadéro Museum, known to be in part of the late Christian times and bearing Catholic texts and the like, Mr. Culin believed the belt to belong to the same period. He also exhibited some strings of wampum attached to long bone beads, such as are worn by the Sioux.

Mr. Cushing remarked that the red feathers at the ends of the strings showed that these beads had come from one of the Plains tribes, whence they had undoubtedly been traded to the East.

Mr. Culin called attention to the numerous references to the use of wampum as stakes in the tribal games. The grains mentioned as stakes by the French missionaries were wampum beads; and, again, the great stakes in the intertribal games were collars or belts of wampum, estimated, for example, by Father Lalemant as of extraordinary value. Mr. Culin believed, in fact, that the name of the Micmac game of *wobunarunk* meant nothing else but the wampum game; for *wobun* was the same word—white—as wampum.

Mr. Culin also exhibited a pottery inkstand of the last century, decorated with yellow, red, and green designs, probably made in Bucks County or Northampton County, Pa. Also, a horn penknife, with a case containing several blades and an eraser, purchased at Nazareth, Pa.; and four single-bladed iron knives of rude make, two marked on the blades with a tomahawk, purchased from an old Indian trader at Nazareth. The trader said he had got them many years ago from another trader who had had them for use in trading with the Indians.

President Brinton made an inquiry in reference to a class of archæological objects found in archæological museums of the United States that are miniature objects, too small for practical use. Prof. F. Starr, of Chicago, had recently discovered a number of these things in the Lake of Chiapas, in Mexico; and winds up his paper with the idea that they are gifts to the gods.

Mr. Cushing suggested that, as in Zuñi, these objects were intended as property-fetiches, sacrificed that they might reproduce their kind.

Messrs. Franklin Platt, Westcott Bailey, and Inman Horner were appointed a committee to nominate officers and standing committees for the annual election at the next meeting.

DECEMBER 2D, 1897.

Mr. Frank Hamilton Cushing, a Corresponding Member, made a communication on the origin of the so-called "banner stones" and "gorgets" of the American Indians.

The precise use of these stones has never been understood and they have been vaguely classified, together with several other varieties, as "ceremonials." By means of a beautiful series of specimens from the University Museum, comprising part of the well-known Brinton collection from Ohio, Mr. Cushing demonstrated the descent of the double-winged banner-stone from the double-bladed war axe. The idea was suggested to him by a wooden club with double blades which he found in the muck of an ancient key at Marco, Florida.

The double war axe, represented both in the hand and on the head dress of the figures impressed on copper from the Etawa mounds in Georgia, served as an intermediate link; the banner stone, of beautifully banded slate, being the warrior's badge, carried as an axe or worn upon the breast, or used in war invocations and calumet ceremonies.

The development of the so-called gorget from the single and double axe of war was also clearly shown, as well as the similar origin of the much-discussed "boat-shaped stones"; and, in fact, nearly all of the curious so-called "ceremonial" objects from the Ohio mounds, and elsewhere, including even the famous and mysterious "bird-shaped ornaments," were indicated by Mr. Cushing as belonging to this war axe series, judging by the nature of their materials and other features. He suggested the Southern origin of these symbolic specimens, tracing them to the extreme South, where they existed universally as practical weapons.

At each step northward they appear to have become more and more highly conventionalized. A most important aid in the demonstration was a remarkable Carolina war axe, from the collection of Dr. Samuel G. Morton, recently presented to the University by Mrs. W. H. Miller.

Dr. Max Uhle followed Mr. Cushing with an exhibition of copper axes from Peru, displaying specimens of full size and others of the same material in miniature. He expressed his conviction that the miniature forms were sacrificial in character, analagous to the miniature slings and the breech-cloths and ponchos, of which he found specimens in many graves.

In this connection, he related the custom of the markets held by the Indians in Bolivia on the 24th of January and the 6th of August, at which all kinds of miniature objects of use were sold; the custom being explained by the belief that the purchasers insured to themselves an abundance of similar things all the year.

Mr. Cushing said that in ancient days in Zuñi a market was held by persons especially appointed, at which similar miniature objects, called the seed of property, were apportioned, not sold, for precisely the same purpose.

Dr. Uhle also said that, in his opinion, the so-called musical stones of nephrite, to which attention was first called by Humboldt, found in the Antilles, Venezuela, and along the Caribbean Sea, were to be explained on the theory expounded by Mr. Cushing. Dr. Uhle had long contested their conventional explanation.

At the conclusion of the communications, the President, Dr. Daniel G. Brinton, expressed the opinion that the identification of the stone implements marked an epoch in American archæology. He freely and unconditionally accepted Mr. Cushing's identification, opposing only the ideas of transmission from the south, which Mr. Cushing urged. An axe, similar to the Southern type, which Mr. Cushing traced northward, occurred in Egypt in the fourth and again in the twelfth dynasty, yet we could not regard it as evidence of intercourse with America.

A discussion on the reasons for the doubling of the axe followed. Mr. Inman Horner pointed out the naturalness of selecting the axe, a short weapon like the Roman sword, as a symbol of bravery. The doubled axe was the symbol of the highest bravery. Mr. Charles E. Dana called attention to the doubling of the eagle on coats of arms resulting from two coats of arms divided and placed in juxtaposition—when an eagle occurred on each, they formed together a double eagle. Mr. Cushing said that among the Pueblos the doubling of the war axe was often precisely for the reason given by Mr. Dana. When an animal was drawn with two heads it was with the idea that the potency of its two eyes might be effective.

Mr. Cornelius Stevenson exhibited two Italian daggers of the sixteenth century, of exquisite workmanship, obtained by him on his recent visit to Europe. One, a *main gauche*, had holes near the hilt to catch and break the adversary's sword. The other, of silver inlay, from the Brett collection, had the blade pierced with small holes to receive poison.

Mr. Westcott Bailey exhibited a jubilee medal, and a forty-franc piece of 1811.

Mr. Carl Edelheim exhibited some interesting antique rings: one, old German silver, carved with Madonna and child; one, Italian silver and gilt, enamelled; one, a Burmese ring.

Special thanks were voted to Mr. Jul. Meili, of Zurich, Switzerland, for the gift of his book, *Die Münzen der Colonie Brasilien.*

It was voted "that the Committee on Numismatics be and are hereby authorized to withdraw from the collections of the Society, now on deposit in Memorial Hall, such coins, medals, and other objects in duplicate as they may see fit, for the purpose of selling or exchanging the same: *Provided,* however, that this resolution shall not apply to the withdrawal of the collection as a whole, nor repeal the resolution passed April 5th, 1894, depositing the same."

The Curator of Numismatics, Mr. F. D. Langenheim, reported the following gifts of coins to the Society for its collection from Mr. J. Colvin Randall: a Columbian half-dollar, 1893; an Isabella quarter-dollar, 1893; an uncirculated half-dime, 1853. Likewise, from Mr. L. J. Sutton: eleven silver, one nickel, and three copper coins. The Curator also reported that Mr. Randall had given six perfect pieces in exchange for six perforated ones in the Society's collection in Memorial Hall.

The Nomination Committee reported the list of nominations for officers and standing committees for the coming year. (See page 11.)

1898.

JANUARY 6TH.

The President, Dr. Daniel G. Brinton, briefly reviewed the history of the Society during the past forty years, as it was just forty years since the foundation of the Society. He then delivered an address on the subject of "Glacial Man," and recounted the discoveries in that direction during the past few years in both the Old World and the New.

Mr. Inman Horner then made the presentation of a medal to the President in a brief speech. He referred to the distinguished services Dr. Brinton had performed for science, and to the signal ability with which he had presided over the Society during the past fifteen years. The medal was to be afterwards made, and was now tendered to the President as an expression of admiration and esteem and in recognition of his services by the members of the Society.

President Brinton made answer to Mr. Horner's speech, and thanked him and the Society for the compliment they had conferred.

Mr. Horner exhibited a pair of Chinese scales, used in weighing silver, and a "shoe" of silver, used in China as money; and a modern Japanese gold piece of the value of five dollars; all collected by Messrs. Geo. L. and J. Edward Farnum on their recent trip to the East.

Mr. Cornelius Stevenson exhibited a Louis XIV sword, inlaid with gold.

Mr. Culin exhibited some remarkable jade objects from Costa Rica, recently loaned to the University Museum.

FEBRUARY 3D.

The death of Henry Thayer Drowne, a Corresponding Member, on December 10th, 1897, was announced.

The President, Dr. D. G. Brinton, spoke further on the alleged discovery of relics of glacial man in America. He pointed out that Dr. Henry B. Kümmel, in *Science*, January 28th, 1898, had shown that the relics found near Trenton occurred in what is probably wind-blown sands that were decidedly post-glacial and partly modern, with some apppearance of stratification, but not real stratification; and that the human implements were, no doubt, laid down by Indians at the time the sand was deposited. It is not impossible that some pieces of stone may occur even in such wind-blown sand; and some pieces may have been lifted up by the roots of falling trees. The layer in question is only four or five feet thick. Also, men might have carried boulders along the river side. The conclusion, then, was drawn that the sand was later than the glacial gravel, and contemporaneous with man, and strictly modern. This, President Brinton said, was the final blow at the twenty-five-year-old theory of the existence of glacial man in the Trenton gravel. Still, we may yet find him elsewhere; in caves, for example; as he did probably exist in America during glacial times. It appears, however, not to be true that man's remains have been found in glacial deposits near Trenton, but only in a deposit that may be no more than 1,000 or 2,000 years old.

Mr. Edelheim exhibited a fragment of a tile from the Alhambra, with remarkably brilliant coloring. The clay, reddish in color, appeared to him similar to what is found in Persia; and he thought the tile was, perhaps, made in Arabia and brought by the Moors to Spain.

He also exhibited a painting on glass, perhaps seven inches by four, probably one of twelve representing the Apostles, by Martin Schongauer; and pointed out that the glass had been covered on both sides with varnish and then etched on the varnish, not on the glass, making the picture perfect on both sides, but especially so on one side; and that a brush had been used to add tones, in order to make the etched figure perfectly plastic; and that strong heat had been used.

Mr. Stevenson exhibited a peculiarly constructed engraved Mexican flint-lock "powder-tester" of this century, that had been given to him by Dr. Donaldson Smith.

Mr. Horner exhibited a medal that had apparently been presented by Napoleon III to old soldiers, survivors of the Grande Armée. The date of striking the medal was not given; but it bore the words: "St. Helena, 5 May, 1821," and "1792-1815."

He also exhibited a medal from a small town in Austria, a gold or gilt coin in the centre, bearing a representation of St. Michael and the dragon, and a curious coat of arms.

JAPANESE SWORDS.

CHIEFLY BY EDWARD GILBERTSON.

FEBRUARY 23D, 1898.

A special meeting of the Society was held this evening in conjunction with the Mining and Metallurgical Section of the Franklin Institute.

Captain E. L. Zalinski, of New York, read a paper on Japanese swords, and exhibited seventy-two fine specimens of them, a small part of his collection of the work of celebrated masters. He briefly described the Japanese method of forging swords, and gave some of his experiences in collecting them.

Mr. Lyman, by way of discussing the subject, spoke of Edward Gilbertson, Esquire, of Ilfracombe, in Devonshire, England, and read extracts from Mr. Gilbertson's private letters of the past four years. He is not only the leading English collector of Japanese swords and mounts, but is extremely well informed and a very intelligent and careful student of his specimens, with much acute observation, and not a mere collector of curiosities. He has done a great deal to encourage the study of Japanese art, and especially was for that purpose one of the founders of the Japan Society of London; and he now rejoices to see it very successful, with a membership of over 600, and the number of collectors and the demand for Japanese objects largely and rapidly increased. He also finds much pleasure in displaying and explaining his own collection of over 260 swords and other Japanese objects to interested visitors, and is constantly adding to it, and revising and regrouping his catalogue of it. His own thorough study and careful criticism of these objects has resulted in an admirable paper on the "Decoration of Swords and Sword Furniture," published by the Japan Society in 1894, with beautiful illustrations from his collection; and a few weeks ago he communicated to the same Society a paper on sword blades, which has not yet reached us in print.*

One very interesting subject mentioned in this recent paper is the prehistoric sword blade. In a letter of last December, he says: "The paper was already too long, otherwise I should have liked to say more about the earliest blades; for I am convinced that the two-edged *tsurugi* is not the original form of the Japanese sword. Without an exception, I think, every blade found in the dolmens and burial mounds is a single-edged weapon and perfectly straight. The *shiri ken* and *shichiyô ken* are of that form, but engraved, and one has a hilt bound round with copper wire. These are possibly of a somewhat later date than those of the dolmens; although all of these last are, I think, too much oxidized to enable one to judge whether they are engraved or not. The dolmen swords had tsubas, ovoid, of iron or of copper plated with gold, and pierced; some with scabbards of embossed copper, with broad silver bands, and with rings for suspending them—corresponding completely with the *tachi* or *katana*. But I have seen no representation or description of a suspended *tsurugi*, two-edged; although, I fancy, they must have been suspended, and that they were introduced from China or Corea. Nor can I believe that the *katana* was invented by Amakuni, by dividing the *tsurugi;* for, certainly, the dolmen blades were made hundreds of years before his time."

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* Read November 24th, 1897, and published in the *Transactions of the Japan Society*, Vol. IV.

Later, March 16th, 1898, he kindly encloses two extracts from his manuscript catalogue of his swords, discussing prehistoric swords and *nagatachi* as follows:

"The original form of the Japanese sword is always stated to be the *tsurugi* or *ken*, a two-edged straight weapon, the two names being merely the Japanese and the Chinese rendering of the same character. There are two forms of the *ken*, the earlier having a point broader than the base of the blade, and forming a very obtuse angle, the later being of equal length from hilt to point, the latter formed by two curves. Japanese writers also tell us that the *katana*, or single-edged sword, was invented by Amakuni, who lived about A. D. 700, by dividing the *ken* longitudinally. I can find nothing that supports these statements, but, on the contrary, all my evidence goes to show that both of them are erroneous.

"Burial mounds and dolmens abound in Japan, and many hundreds have been opened, Mr. Gowland having examined 400. In them he found, among other things, swords, several of which are in the British Museum; and others, derived from various sources, are to be found preserved in private collections or temple treasuries, in Japan. All of these, so far as I can learn, are without exception single-edged straight blades—*katana*, in fact, without a single two-edged blade among them. Burial in mounds or dolmens seem to have been used in Japan from a little before the Christian era to about the year 600, or 700 at the latest; so it is absurd to credit Amakuni with the invention of a form of blade in use hundreds of years before he was born. I have representations of three blades bearing his signature. One of them is similar to the dolmen blades; the others are of the ordinary *katana* form, narrower at the point than at the base and slightly curved, a form impossible to obtain by dividing either kind of *ken;* and I take the truth to be that he probably first made *katana* of the modern shape.

"The earliest example of the *ken* that I can hear of is the *tamakazari* sword of the Emperor Shomu, who died in 751; and it is preserved in the Shoso-in at Nara. It is described in the list of presentations to the temple of Todaiji, under the date of the 6th month of the 8th year of Tempei Shoho (A. D. 736), as 'one large *Chinese* sword adorned with gold and silver; length of blade, 2 *shaku*, 6 *sun*, 4 *bu* (31½ inches), two-edged, the hilt covered with *same*,' etc., etc. I doubt much whether the *ken* was ever very much used in Japan, except for short blades, among which it is frequently found.

"I can learn nothing about the *nagatachi*, or 'long *tachi*,' several examples of which exist in England, one of them being in my own collection, and several others are preserved in various temple treasuries in Japan. One, at the temple of Gongen, at Oji, has a blade four feet one inch long, with a tang two feet one inch, implying a total length from the pommel to the end of the scabbard of about seven feet three inches. That of Noritsune, at Itsukushima, made by Yukiyoshi, has a blade four feet eight and a half inches in length, weighing fourteen pounds; and another blade at the same place is seven feet three inches long from the pommel to the end of the scabbard. My own has a blade four feet two and a half inches long, the total length being six feet two inches, made by Fujiwara Hiromoto in 1838, the year of the accession of the Shôgun Iyetoshi; but it has no *mon* connecting it with him.

"It seems clear to me that none of these could ever have been used as weapons. They require two men to draw them, and although a strong man might wield them, mine, at least, is so ill-balanced that it would be a most inconvenient weapon; for an active opponent could easily run within the guard of a man using such a sword, making him practically defenceless. My own conviction is, that they were merely processional swords, borne before or after the Shôgun or great daimios on certain occasions, more especially as their style of mounting is that belonging to commanders. I ought, however, to state that the *Kogeishirio* says, unless the interpreter has given me an incorrect translation, that one of these *nagatachi*, seven feet four inches long, was *worn* by a member of the Fukuma family. This would nullify my theory, but I still doubt the correctness of that statement. I cannot conceive it to be probable that any man would go into battle with a weapon of that length dangling in front of him. He could only hold the scabbard, while some one else drew his sword for him; and, when that was held by him, he would be encumbered by about five feet of heavy and useless scabbard."

One of the principal new points mentioned by Mr. Gilbertson, in his recent paper, appears to be the remarkable skill shown by the sword grinders and sharpeners in giving final shape to the sword, a matter that he has several times discussed in his private letters. For example, he wrote, last September: "One very interesting feature in *katana* blades, long ones especially, is the truth of the curve, more particularly when it is a blade having a '*sori*' [bend] of an inch, or an inch and a quarter." Again, last December, he speaks of "the astonishing truth and accuracy of the lines and curves. In the *katana* which tapers towards the point, I find the edge, the line defining the *shinogi* [parallel flat surfaces] and *jigane* [sloping surfaces] and the back all curves, not parallel, but all true, and preserving from hilt to point their proportional distances. This is not an easy matter to do on paper, but to do it on a flat stone, with one part of the *jigane* intensely hard, and the other comparatively soft, is to me a surprising piece of skill; for the natural tendency is to make a hollow at the soft side of the flat." In November, 1895, he wrote: "Numbers of my blades are a pleasure to me to look at merely on account of the grinding, knowing how it is done. The faces are as truly flat, the lines as perfect, and the long, delicate curves as true as if they were lines drawn by a machine. I had a great triumph once over a man who maintained that any good English workman could do it. He was one of the great furniture makers, and I asked him if any of his men could do it in wood.

'Hundreds,' he replied. So I gave him a blade, about twenty-five inches long, and showed him that the lines and curves were mathematically true, the *shinogi* and *jiganc* perfectly straight and level by a straight edge in every part. I told him if one of his men would make me a copy of the blade, not shorter, that would stand the same tests, I would give the man a couple of sovereigns. Four days afterward the blade came back, and the son of the gentleman told me that two of their men tried it, and brought what looked like an exact copy, but, on testing it, it was untrue. The second man, after hours spent in endeavoring to get the lines true, after having got the faces true, burst into a fit of swearing that was terrific, broke the thing up and dashed it on the floor. It beat the French sword makers, Colonel LeClerc said, with all their scientific appliances."

In a letter of January, 1896, he says: "I find that the Japanese sword is a subject that always surprises people not familiar with its details. To me there are still many mysteries, as it were, connected with it, that only explain themselves very gradually. You mention the coating the steel bar with clay, etc., before it is put into the fire, every time it is going to be folded and welded. In bringing it up to the welding heat, I fancy the coating must be burned into bricklike material, and that it must be a difficult matter to get rid of this perfectly, before the bar gets dangerously cold. Unless it were all removed perfectly, there would be sand cracks and defects fatal to the quality of the blade, and to the exquisite grain that characterizes the fine blades.

"Then there is the tempering, and I am inclined to think that, after all, that was the secret of all the famous *kotô* [old sword] smiths; for as to forging, grinding, and finishing, I can conceive nothing superior to some of the modern blades that I have, or some with false signatures of the great smiths. There was not only the composition of the protective coating, but there was the knowledge—a sort of instinct—that enabled the smith to detect the exact moment when the bared edge was at the proper temperature. Doubtless, the temperature of the water was a great part, and whether it was pure water, and also the mode of plunging the blade into it."

In September, 1897, he writes: "I came across, in one of my Japanese books on swords, a passage describing the process of curving or straightening blades. The former was done by hammering it on both sides from hilt to point, the latter by applying a piece of heated copper to the back (*mune*) until the *shinogi* became purple, and then putting it, edge first, into water, repeating the process until the desired curve is obtained; and this is more readily achieved with hard blades than with others. In connection with that, I found that the Osafune, Bizen, work between 1375 and 1427 was called *ko-sori-mono*, from the *sori*—that is, the depth of the curve—being small."

In August, 1896, he says: "In the *Kotô Meidzukushi* I found a puzzle cleared up. As you must have noticed, the *kotô* [old sword] smiths did not shine in the way of calligraphy in signing their tangs; and I found occasionally blades with the names of eminent smiths in gold damascening, the characters well formed, but utterly unlike their engraved autographs. Some even were written in red lacquer on the tang. Now, I found from the *Kotô Meidzukushi* that the *mekiki*, the experts, often, when they certified an unsigned blade as being by an eminent master, put his signature upon it in damascening, sometimes adding their own, as in the case of a Masamune of mine, where the *mekiki* Hon-a has put his own name and *kakihan* [monogram] on the other side. But this addition of the signature in damascening is mentioned in the *orikami* [expert's certificate]. The work of the old Gotos, who never signed their work, was certified in the same way, chiefly, I think, by one of the later Gotos, Mitsumori, or others about his time. I now think that *kotô* blades that I have, with the signatures in red lacquer, or *zôgan* [damascening], evidently not by the man to whom they are assigned, have probably had *orikami* certificates attached to them that have been lost. Hütterott speaks only of the Honami family as experts, Koyetsu dating back to the sixteenth century, and another Honami being the sword-sharpener—one of their functions—to the present Emperor. But my *orikami* and three others that I have seen, of the seventeenth and eighteenth centuries, are decidedly signed 'Hon-a,'—only two characters. I have never seen a certificate by one of the Honami and wonder if there is any connection between the two families. My Hon-a is of 1818." A scholarly Japanese in Philadelphia thinks that the two families probably had a common ancestry.

Of his own extremely useful labors and of his collection, Mr. Gilbertson says, in his letter of October 6th, 1895: "I have five [Japanese] works, in about forty volumes, which contain full-sized representations of tangs, points, etc., and short or long notices of smiths. Some are arranged according to the Iroha, others by provinces, others by families; so that it is a very troublesome affair to hunt up any given man, if one wants to compare a signature, *yakiba, yasuriye*, or the end of a tang. So I have been making a general index to all the volumes, arranged alphabetically, and have just completed it. [In a previous letter he had said he had made a manuscript volume of 500 pages of over 1,000 tang inscriptions.] The next thing is to copy all the tangs into one book, arranging them in the same way, with references to the originals; and then I shall be better able to distinguish two men of the same name, but of different dates, and shall have a good many absolute dates instead of 'about.' I have, however, only one authority on old swords, the *Kotô Meidzukshi;* the *Kokonkaji Meidzukushi* being mixed, and the others being all on *Shintô* [new sword] makers. . . . My collection of swords is now tolerably extensive and interesting, furnishing a good deal of material for study; and has paid me very well in the way of saving me from the temptation to buy Masamunes and other blades nominally by great masters, that have been offered to me from time to time. But some of these forgeries have let me into the knowledge of the fact that, although as temperers and makers of swords of remarkable quality these early masters are unrivalled, there are blades of the eighteenth and early nineteenth centuries that as a question of forging and perfect workmanship are as fine as anything one can desire, and as good as one could wish for, quâ weapon. I was glad to see that the Emperor was having one of his Sadamune blades, that belonged to the Emperor Gotoba, mounted by Natsuo and another chaser, to be worn on ceremonial occasions; and also that he was having a gold lacquer book stand made, with a view of showing that the art is by no means lost, it is only the patrons that have disappeared. Judging from their cloisonné and silver work, I believe that, if fairly dealt with, the Japanese metal workers can supply art metal work and jewelry—independent of stones, of course—equal to, if not superior to, the best western work, and less commonplace and conventional. From what I have seen of their silver work, I believe them to be as great masters of the hammer as our old goldsmiths were; and our workmen of to-day are not encouraged to acquire the skill. It is rare even to come across a piece of silver thoroughly hammered—the die, the swage, and the press are more in demand than the hand of the skilled workman, and he has no chance, even if he has the tendency, either to become an artist or to know even what is or is not artistic."

On the variety of the points yet to be discussed, he wrote in his letter of the thirteenth of last month: "In fact, there is hardly a limit to what can be said about the Japanese sword as a whole. . . . No one has as yet, so far as my knowledge extends, dealt with the '*hi*,' the grooves of various forms, so admirably wrought, in the large *katana* especially, nor with the *bonji* [Sanscrit] inscriptions, or the intaglios. There are various types of the dragon, the figures of Fudô, Bishamon, Marishiten, Jurojin, Batô, Kwannon, etc., all having, I suspect, a particular significance, and not merely ornaments."

In June, 1895, he wrote: "The deeper I go into the subject the more I find there is to learn. I think I sent you a copy of a descriptive catalogue of 169 swords which a gentleman at Tokio sent me, and for which he wanted £3,000. He said he had been collecting them for sixteen years and wished to sell them as a collection. He must have been dismally imposed upon by the men he took for experts, I imagine, if I may judge by the astounding blunders after sixteen years of collecting; for they were so ludicrous that I sent him a long sheet of corrections, urging him to cancel his catalogue and reprint it, or there was no chance of his getting an offer for the collection from any one with any knowledge of swords. One of the swords is described as having one side of the blade tempered by one smith, and the other side by another. I told him that, if he had any evidence establishing the truth of that, he would get a long price for the weapon, for it would be unique. I have no reply yet."

Of the interest, depth, and importance of the subject he wrote, December 11th, 1893: "The true account of the make of blades rendered all my illustrated Japanese works on swords much more interesting and valuable, and taught me what to look for. Not that I attach the slightest value to the opinion of any expert, Japanese or other, as to the authenticity of the signature on a blade; but the details given in those works are of the greatest interest to any one conversant with arms and their manufacture. To be able to certify the maker of a Japanese blade requires not only very varied knowledge, but long practice and experience. It is as difficult as to assign a painting to its author; but to know whether one has a remarkable piece of forging, tempering, and grinding before one is within the capacity of every lover and student of swords. I have been that for about sixty years, and can fully understand why the wealthy *samurai* or *daimio,* instead of growing Cellinis to make plate and jewels for him, patronized and protected the Gotôs, the Umetadas, the Yasuchikas, the Toshinagas, and the host of other exquisite chasers, who decorated his invaluable blades with metal work that has never been surpassed in quality, nor equalled even in the sense of mere working in metal. It has been a great pride and pleasure to me to see that Tiffany at once saw what a field of artistic beauty in metal work was opened up by these Japanese chasers. Our manufacturers and workmen get out of old ruts with difficulty, and our public is just beginning to have a vague idea that Birmingham and Sheffield have something to learn from Japan, a dictum which is redolent of flat heresy to 999 of my countrymen out of every 1,000."

In August, 1896, he says: "The number of those who take an intelligent interest in Japanese work steadily increases, and a wider perception spreads of the use that can be made of it in the arts generally. Much is to be learned from it, especially as regards decorative art and metal working."

MARCH 3D, 1898.

Mr. J. T. Morris spoke of the Japanese bow, and a small bronze figure with a bow, modern work, obtained at Yokohama; and exhibited a Japanese bow over seven feet long; and illustrated the subject with three Japanese books, showing in pictures the manner of holding the bow and arrow and the string, and the method of arrow release. Mr. Morris pointed out that the very long bow was held far below the middle; and that often after the discharge of the arrow the bow was whirled half round a longitudinal vertical axis, bringing the string upon the outer side of the arm. He also exhibited a bow obtained by him at Delhi, India, and a sling from Cairo.

Mr. C. Stevenson said the Delhi bow was the same as the Tibetan.

President Brinton said the Delhi bow was commonly called in general the Tartar bow. He remarked that the pictures of the books exhibited, nearly all, or quite all, showed the Mongolian arrow-release, which is unknown in the Mediterranean regions and totally unknown in America. He was also not aware of any American bow where the arrow is released from the lower third of the bow; and such a bow is also unknown in Europe.

Mr. Horner said that in ancient times short bows were used in Europe; for example, the Scythian and Roman. The longest bow in history was the English six-foot bow of Agincourt and Cressy. Therefore, this evening's bow is unique as regards its length and the place of using the arrow. He remarked upon the great need there was of keeping the bowstring dry, and of the difficulty thereby added to the use of the long bow; and on the importance of the kind of wood used for so long a bow.

President Brinton said that the North American Indians used bows up nearly to seven feet in length, made of hickory, slightly curved, probably with deer-sinews for strings.

Mr. Stevenson said that the length of the bow was determined by the height of the man and the length of his arms. The bowstrings at the time of the battle of Cressy were kept dry in the quiver. The Genoese bowmen employed in that battle had had their strings wet in a storm, and so threw away their bows as useless, and were, consequently, trodden down by the English.

Mr. Horner spoke of the battle of Cressy in the same way, and of the high development of archery among the far Eastern peoples.

Mr. Morris exhibited a coin marked: "10 Dollars Pike's Peak Gold 1860—Clark Gruber."

Mr. G. Albert Lewis exhibited a coin found at Graver's Lane Station, Chestnut Hill.

Mr. Stevenson exhibited a silver seal and sealing wax holder, with a seal at each end, one in silver and the other in crystal. It had belonged to his great-grandfather, to whom it was given by a Hessian, wounded at Monmouth or Trenton.

The Auditing Committee, through Mr. C. D. Clark, reported that they had examined the Treasurer's accounts for 1895, 1896, and 1897, and had found them correct. The report was accepted.

Mr. C. E. Dana inquired why the six-pointed star was used in the United States Treasury Department, but the five-pointed star in the other Departments.

Mr. F. D. Langenheim said that the English star was six-pointed, but the French five-pointed; and suggested that, therefore, Betsy Ross, in making the first United States flag, used the French star.

Mr. Lewis said that it was a mere myth that Betsy Ross designed the flag; that it was designed by the grandfather of Dr. Ray Barton, and that the mullet with five points was used because it occurred in George Washington's coat of arms.

APRIL 7TH, 1898.

Dr. Max Uhle, a visitor, exhibited a curious, unique, probably prehistoric implement (Fig. 5) obtained by him on an island of Lake Titicaca, in upper Bolivia. It was wholly of copper in the form of a hammer with a handle five and a half inches long, and a double head, about two inches long and an inch and a

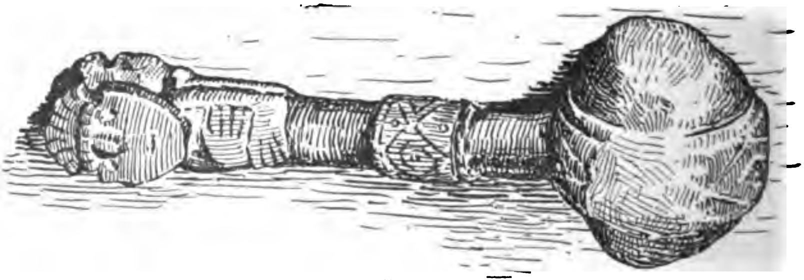

Fig. 5.

half in diameter, the whole imitating the form of prehistoric stone hammers that have a wooden handle bound to a stone head grooved around the middle. The faces of the copper hammer had apparently been pointed, conical; but in use had become nearly flat. The handle was elaborately ornamental in shape, especially at the outer end. Such prehistoric stone hammers are not rare in Bolivia, and he had himself found 200, being the first systematic explorer of such objects there; and there are, perhaps, 150 or 200 specimens of such hammers from Bolivia in our museums. The stone hammers are made of soft stone and other stones; and he exhibited two specimens and also drawings showing how the wooden handle was bound upon the stone head.

He also exhibited a couple of specimens of the "bola," each made of three cords, in one specimen about eighteen inches long, and in the other about four feet long, united at one end in a knot, and bearing at the other end a weight. In the larger specimen, the weights were stones of a couple of inches in diameter, enclosed in leather. In the smaller specimen, the weights were partially rounded cylindrical blocks of a light kind of wood, of about the same size. The implement is swung round the head like a sling, and thrown, and is a very effective weapon. It is also used for handling the vicuñas and for catching horses, and in that case the weights are of wood. Many of the grooved hammer stones may have been used for bolas, and examples are figured from Patagonia and Chile. Therefore, some of the Bolivian grooved stones were probably used for bolas. Some such stones are pointed. Nowadays, in Argentina, bolas are sometimes made with weights of lead.

It appears, then, that there are probably two kinds of grooved stones: some for bolas and others for hammers. Uncivilized peoples are very sparing in the variety of the shapes of their implements; and, for example, hammer stones not only may, but certainly have, been used as anchor stones or net sinkers, having the same type of shape. Such peoples use precisely the same form in various ways; for instance, tied to a stick for a hammer, or tied to a net for an anchor or sinker.

It is probable, therefore, that the axe-shaped object, the banner-axe, discussed by Cushing at a recent meeting of our Society, was also used in various ways and made of various sizes, not necessarily bearing in mind any religious significance; just as we use a small knife of a similar shape to a sword without thinking of any connection between them.

Dr. Uhle also exhibited a prehistoric bronze object from Bolivia, a tomahawk head, flat and thin, and somewhat of the shape of a housewife's mincemeat chopper. The blunt-edged blade, five and a half inches long, strongly curved, and perhaps an inch and a half broad, was joined by a shank of about the same breadth to a narrow straight handle or back perhaps four inches long, the whole about a quarter of an inch thick, or less, and nearly four inches broad. The material was bronze, copper with some tin, about two per cent., but not the tin percentage of European bronzes. The bronze was probably expressly alloyed, as the materials are not found naturally mixed. Tin ore is found in Bolivia and smelted; and he had seen crystals of tinstone there as large as peas.

Mr. Morris described a stone double-pointed battle-axe, as it seemed, that he bought some years ago at St. Paul, Minn. The stone was about five inches long from point to point and about two inches in diameter at the middle, grooved around the middle, and had a light elastic wooden handle about 28 inches long. It was new, and apparently made for use as a weapon, and not as a ceremonial object.

Mr. Morris exhibited a coin of Nero. One side bore Nero's head, and the other a full-length figure of a man with a lyre.

Mr. Charles J. Cohen was elected a Resident Member of the Society.

MAY 5TH, 1898.

Mr. Chas. E. Dana made a communication on crowns, reading from his notes descriptions of several of the most noteworthy historical crowns. The Anglo-Saxon princes wore a fillet of pearls; Charlemagne's crown, formerly at Aix-la-Chapelle, afterwards at Nuremburg, and now at Vienna, is the most interesting of all. It is said to weigh fourteen pounds, and is divided into eight panels, and has twelve unpolished jewels. Each panel was described, some having only gems, some having inscriptions in Latin; on the top there is a cross; the crown has some additions later than Charlemagne. The English crown was first kept by the Templars, and was afterwards kept in the Tower. Blood's nearly successful attempt to carry off the crown from the Tower, in 1671, was spoken of. Special mention was made of the crown named after Edward the Confessor; and Queen Victoria's crown was described. Likewise, a description was given of the imperial crown with eight flowers and eight eagles; of the Iron Crown of Lombardy, containing a small band of iron, said to have been made from a nail of the Holy Cross; and of the crown of St. Stephen.

Mr. I. Horner remarked that the important, distinguishing part of the crown proper appeared to be the closing of the crown by arches over the top, not leaving it open like a coronet or circlet. A sovereign prince (in England, only the Queen and the Prince of Wales) has the surmounting arches as the characteristic of a monarch who has no feudal superior. Among the ancient Romans, crowns were only ornaments. As royal emblems they began to be used in the middle ages.

Mr. Dana said that the best authority as to the forms of crowns was the seals. The upper edge of the circlet of the crown of Edward I, of England, bore projections in the form of a trefoil. Edward III was the first to add the cross, in alternation with the trefoil. The cross was also placed at the top of the closed arches. The arches rest upon the crosses of the circlet, not upon the fleurs-de-lis.

Mr. Horner said he thought the crown was derived from a hat, and that it came from the East; but that the coronet or fillet was derived from a wreath.

President Brinton said that the Visigothic crosses of Spain, preserved at Toledo, date from the fifth, sixth, and eighth centuries, and are very rude. The Iron Crown, or Crown of Monza, in Lombardy, said to date from the time of Queen Theodelinda, in the seventh century, did not look to him, when he saw it, anything like so old. The story seemed to him to be folk-lore rather than history, and the crown he thought to be late mediæval.

Mr. Horner spoke of having seen American Indians in Buffalo Bill's show to-day, and said he was convinced by their physiognomy that they were of Asiatic Mongolian origin.

President Brinton declared that Mr. Horner was mistaken; but that it was not a numismatic or antiquarian subject to be discussed here.

Mr. Westcott Bailey exhibited a Cuban coin, a well engraved silver dollar, marked, " Rep. of Cuba, 1897. Patria y Libertad. Souvenir."

Mr. Richard Wistar Davids and Mr. John F. Lewis were elected Resident Members of the Society.

OCTOBER 6TH, 1898.

The death was announced of Rt. Rev. Wm. Stevens Perry, Honorary Vice-President of the Society, for the State of Iowa, May 10th, 1898; of Hon. Thomas F. Bayard, Honorary Vice-President for the State of Delaware, September 28th, 1898; and of Theodor M. Roest, of Leyden, Holland, a Corresponding Member, September 2d, 1898.

A bronze medal of Blumenbach was received as a gift from Mrs. Harrison Allen; and a special vote of thanks was passed.

Mr. F. D. Langenheim presented to the society the medal of the Reading Sesqui-centennial.

Mr. Culin spoke of the European museums he had visited during the past summer, with special reference to their collections of American archæology and ethnology. He described the bow and the feather-robe in the Musée de la Porte de Hal, in Brussels, attributed to the Emperor Montezuma; and the so-called bow of Montezuma in the Royal Museum of Historical Art, in Vienna. He pointed out that the bow and robe were wrongly attributed, and that they probably came from the Tupi Indians of Brazil. He spoke of the wholly inadequate manner in which America is represented in European museums, outside of Berlin; and of the obligations resting upon American institutions to collect and preserve the antiquities of this country. He exhibited photographs of the interiors of a number of the museums referred to.

President Brinton, in comment, said that there were, no doubt, many collections of American objects in Europe outside the great and well-known collections which would well repay inspection by an interested traveler. He instanced the collections of Peruvian objects in the municipal museum of the city of Cologne, collected by Dr. Constanz, whose publications had been overlooked by Mr. Dorsey; as well as the Northwest Coast collection at Boulogne-sur-mer, which that unusually acute scholar, Alphonse Pinart, had given to his native city. Central American collections are to be found in Basel. In Bremen, the municipal museum contains Costa Rican collections worthy of study. He also understood there were collections at Dieppe.

Mr. Marshall H. Saville, Curator of Archæology in the American Museum of Natural History, New York, a visitor, said he had, three years ago, made a trip through the museums of Europe similar to that of Mr. Culin. Like him, he had been impressed with the cases used in Dresden. Mr. Chas. H. Read, in London, illustrated the practical advantage of iron cases over wooden ones. An iron case that had not been opened for years had admitted practically no dust; but the interior of a wooden case needs to be cleaned after six months. In Liverpool, Mr. Saville had unearthed the Fejervary Codex, one of the most important Mexican codices, in a damp case in a basement. Through his efforts it was carefully looked after. He believed it was presented to Oxford when it was transferred from Liverpool. Two of the most beautiful specimens of feather mosaic exist in Bologna.

The Curator of Numismatics, Mr. Langenheim, reported that he had inquired of the Swedish Royal Mint whether the dies of the medal of Mr. Mickley, the first President of the Society, were still in existence. It was answered that the mint had no knowledge of their whereabouts.

NOVEMBER 3D, 1898.

Mr. Inman Horner, the Historiographer, read obituary notices of the following deceased members of the Society: Thomas Hockley, Lewis A. Scott, W. S. W. Ruschenberger, Robert H. Lamborn, J. Sergeant Price, as follows:

NECROLOGY.

BY THE HISTORIOGRAPHER OF THE SOCIETY, INMAN HORNER.

THOMAS HOCKLEY, Treasurer of our Society from the year 1888 until his death, early in 1892. He was born in Philadelphia on January 26th, 1839, his father being John Hockley, for many years the cashier of the Bank of North America, and his mother Miss Katherine Stevenson. He entered the Sophomore Class of the University of Pennsylvania, and graduated in 1859. In 1862 he was admitted to the bar of Philadelphia County, having had Charles E. Lex for his preceptor. He enlisted as a private in the Independent Artillery Company, Pennsylvania Militia, in both 1862 and 1863, when the State was invaded. In the year 1871, he married Miss Amelia Daniel, of Boston, Mass.; and he had two children, both now deceased.

Mr. Hockley was much interested in the advancement of the interests of science in his native town, and gave freely of time and labor to them. As I have stated, he was Treasurer of our Society. He was also Treasurer of the Department of Archæology and Paleontology of the University of Pennsylvania, Secretary of the Zoölogical Society, and a Trustee of the Fairmount Park Art Association—honorable, but unpaid positions. He had an extensive private collection of mediæval furnishings and archæological objects in his own home; and his knowledge of art was placed freely at the service of the Society. He passed away suddenly on March 12th, 1892, at the comparatively early age of fifty-three.

LEWIS ALLAIRE SCOTT was born in Philadelphia on August 10th, 1819, and was the son of John Morin Scott, a distinguished lawyer, and Mary Emlen, his wife, of the well-known family of that name. He was a pupil of the famous Scotch schoolmaster, Samuel Crawford, and was, no doubt, well grounded in the classics, and perhaps in little else (for that is still the way of Scotch schoolmasters) when, in 1834, he entered the class of 1838 at the University of Pennsylvania, to graduate first honor man and valedictorian of the class. He then became a civil engineer, and took part in the survey of the Philadelphia & Erie Railroad. Abandoning this, he adopted his father's profession, and was admitted to the bar in September, 1841. His practice was chiefly in the law of Real Estate. After 1864, he retired from the active pursuit of his profession. During the war, being at about the military age limit, he became an officer of the Home Guards, and attained the rank of Major.

Mr. Scott was much interested in linguistics. He devoted much time to the study of the Arabic and Syriac languages, and was an expert Egyptologist. He was a life-member of our Society, and for many years one of its Vice-Presidents. He took much interest in our discussions; and, until ill health prevented, was always present at our meetings; and all the projects for advancing the aims of the Society met his hearty and generous support. Personally, as most of us remember, he was exceedingly gentle and kindly in manner, and given to hospitality, and when ill health darkened his later years no one had more of our sympathy.

He married, in 1857, a daughter of the late Richard Wistar, and died in August, 1896, leaving a widow, three sons, and a daughter.

DR. WILLIAM SAMUEL WAITHMAN RUSCHENBERGER was born near Bridgeton, N. J., on September 4th, 1807. At the age of 20 he was appointed "Surgeon's Mate" in the United States Navy. His first service was with the Pacific Squadron, and after his return he entered the University of Pennsylvania, receiving the degree of M. D. in March, 1830. The following year he was commissioned a Surgeon in the United States Navy, and during the years 1836-39 visited the far East as Fleet Surgeon of our squadron in the Pacific Ocean. From 1854 to 1857 he was again in the Pacific Ocean. During the Civil War he was President of the Examining Board of Surgeons; and his last active service was the charge of the Naval Hospital in Philadelphia in 1873. He was retired with the title of Medical Director and the rank of Commodore, in 1874, and was for many years at the head of the list of medical officers of the United States Navy.

He died March 24th, 1894, having been for sixty-eight years in the service of the Government. He married, in 1839, Miss Mary B. Wister, and left one child, Lieutenant C. W. Ruschenberger, U. S. N. He published, in 1838, *A Voyage Around the World;* in 1854, *Notes and Commentaries During Voyages to Brazil and China*, and many pamphlets and monographs on special subjects. He naturally was a member of many learned societies, and took an active part in the meetings of all of them; especially in the American Philosophical Society, of which he was Vice-President from 1885 to the time of his death; and of the Academy of Natural Sciences, of which he was President from 1869 to 1881. He was Vice-President of the Numismatic and Antiquarian Society for many years.

ROBERT H. LAMBORN was born at Kennett Square, Chester County, Pennsylvania, in the year 1836. At an early age he entered the service of the Pennsylvania Railroad Company as assistant surveyor, or rodman; but soon after attaining his majority he went to Freiberg, in Saxony, to study metallurgy. After graduating there, he was entered as a student at the Ecole des Mines, in Paris. He also obtained the degree of Ph. D. from the University of Goettingen.

His technical knowledge of metallurgy obtained for him, soon after his return to this country, the then novel employment of Inspector of Rails for the Pennsylvania Railroad Company, a position which the increased scientific knowledge of iron and steel made useful and necessary. About the year 1866 the Pennsylvania Steel Company was formed to manufacture steel by the almost untried processes patented by Sir Henry Bessemer, and Lamborn was chosen Secretary. This company was the second formed in the United States, the first being at Troy, N. Y., under the direction of Mr. Holley. Lamborn was shortly after made Secretary of a company formed to build a railroad from the head of navigation on the Mississippi River to the head of Lake Superior, now the St. Paul & Duluth. These positions occupied his attention for many years. Later, he became interested in railroads further west, and passed much of his time in England in negotiating bonds and in charge of other important transactions involving the investment of capital.

In the meantime his own private fortune was increasing rapidly, and about 1890 he retired from business life with ample means. He began a systematic collection of pictures in Mexico, buying at liberal prices the altar pieces and such other pictures as would best illustrate Spanish art in the New World. He endeavored, too, to solve the mosquito problem, and seemed at length to have persuaded himself that the artificial cultivation of the dragon fly, commonly called the devil's darning needle, would make the extermination of the unpleasant mosquito all but certain.

I made his acquaintance in the year 1868, when he had charge of an expedition, as it might truly be called, from St. Paul to Duluth, of high railroad officials and their wives. We traveled as a caravan, carrying our own supplies over the one hundred and fifty miles, with Lamborn as master of transport; and the care and thoroughness of his manner made a deep impression on me. I recall that on the journey he pointed out to us from the car window a small farm in Iowa as the place he was in treaty to purchase, to begin life as a Western farmer, when a severe illness intervened. He was much interested in our Society and a constant attendant at our meetings.

The last time I saw him was in the autumn of 1895, at a bicycle school, where he was taking lessons in the art of bicycle riding with almost the same vigor I had witnessed thirty years before in the delicate art of managing a company of exacting tourists. He had changed but little in appearance, the same well-cared-for brown beard and wavy hair and well set up, stocky figure, a little larger in girth and the resolute eyes as bright as ever. Very soon after, we heard of his death, alone and without warning, in the hotel in New York where he passed his winters. This was the 14th day of January, 1895, in his fifty-ninth year.

John Sergeant Price was born in Philadelphia, June 10th, 1831, the son of Eli K. Price, who was for many years the honored President of this Society. Most of us here recall the venerable President, who, at his great age, never failed to preside at our meetings, whether the night was fine or storming, and to whose labors and countenance the Society owed much in its earlier and struggling years. The son followed in the footsteps of the father in this as well as many other directions. Although a busy man, he always found time to be at our meetings, to act on any committee, and to advance our interests in any way possible to him. His father, as all who know of business in the city of Philadelphia, was, perhaps, the ablest real estate lawyer of his time, and as a counsellor, trustee, or executor had the direction or management of estates for many owners and of many millions of dollars in value. In this he associated with him his son, John Sergeant, named after the most highly esteemed member of the Philadelphia bar; and, as the weight of years increased, the son became more and more busily engaged, until the whole of the vast business interests devolved on him. They were all managed with skill, prudence, and capacity, and the third generation of the family still keep in their hands the management of estates which the ability and fidelity of their forbears caused to be entrusted to them. Mr. Price filled many positions of trust and honor. He was for many years the Treasurer of the American Philosophical Society, a Trustee of the Western Saving Fund, and Director in a number of stock companies.

He enjoyed good health up to a short time before his death. He then suffered from a serious illness; but seemed to have recovered completely, when, on August 16th, 1897, a sudden attack of heart disease brought his useful life to a close.

President Brinton spoke on the "Archæology of the Island of Cuba."

Mr. Charles E. Dana exhibited a collection of casts of royal and other seals obtained by him at Paris.

Mr. Carl Edelheim exhibited several antique rings, including a Gothic bishop's ring.

Mr. Cornelius Stevenson exhibited a pair of fire-gilt stirrups which had belonged to General Kleber.

Mr. Culin exhibited a set of four stone dice, *u-lu lu-lu*, made of pumice stone by natives of the Hawaiian Islands, now in Philadelphia.* The dice were marked on one side with a cross, and, respectively, with one, two, three, and four dots. The opposite sides are plain. They bear a general resemblance to the bone dice used by the Indians on the eastern coast of North America.

Mr. Culin exhibited a collection of old German playing cards, purchased by him during the past summer in Nuremberg.

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* See Hawaiian Games, *American Anthropologist*, New Series, Vol. I, p. 201.

Among them there was a pack of 32 cards, with brass backs, and with the faces covered with horn, and the four suits indicated by the colors red, green, white, and yellow. Each suit has four numbers, seven to ten, marked by Roman numerals in a wreath of green leaves; and three court cards: a grotesque man, a flower, and a crown (the king). Mr. Edelheim said that these cards were anciently used in beer shops. There were also six cards and two fragments of Nuremberg cards of the sixteenth century (assigned by Bierdimfl to 1583). There was also a pack of Nuremberg cards with sentimental and humorous copper-plate engravings and verses of the early part of the present century.

Mr. W. H. Pfahler, of 127 North Thirty-third Street, Philadelphia, was elected a Resident Member of the Society.

DECEMBER 1ST, 1898.

Professor Maxwell Sommerville read a paper on "Some Evidences of Superstition from the Desert of Sahara," and exhibited a collection of charms and amulets brought by him from the desert.

Mr. Inman Horner exhibited an ivory carving recently presented to him by Dr. J. Donaldson Smith. It was in the form of a three-clawed Chinese dragon.

Mr. Culin exhibited a number of fans recently acquired as a gift by the Museum of the University of Pennsylvania from Mrs. Joseph Drexel. Two of the fans were made for the Queen's Jubilee; one of them had a painting on gauze signed Bellini, with a Brussels lace coach inserted, with a Brussels lace border and mother-of-pearl sticks inlaid with violets in pearl and gold; and the other had Wedgewood designs in green silk, three plaques ornamented with spangles, and had enamelled and spangled pearl sticks. This last was a reproduction of one of the fans in the prize case.

The committee on nomination of officers of the Society for the coming year reported a list of names, and the whole list was unanimously elected. (See page 12.)

INDEX.

c—communication. d—discussion. e—exhibit. o—obituary. g—gift.

PAGE

Abbott, Dr. C. C., 15, 46; d 26
Abbott, H. J., e 38
Aboriginal American: inscriptions, 47, 51; pottery, 93
Abraxas inscriptions, 55
Accadian and Chinese, 49
Adam, L., 15
Adams, Dr. H. B., 15
African prehistoric diamond mines, 52
African, South—gold, 53
Africa, Southeast, 121
Aino, 24, 82
Ala Shehr, 76
Alaska, 29, 32, 33
Algerian mound, 111
Algonquin, 35, 36
Allen, Mrs. H., 22; g 152
Allentown, Indian pits near, 34
Amakuni, 138
Amalecite Indian bowl game 130
Amalfi, Duke, 107
Ambiveri, Prof. L., 15, 18
American Indian: arrow-making, 35; carved stone object, 104; degeneration, 118; glazed pottery, 89; lead mining, 75; migration, 25; physiognomy, 151
American Phil. Soc'y, 150th anniversary, 41
Anatolia 50
Anderson, Dr. J. W., 13
Ankor, Cambodia, temples, 87
Appleton, W. S., 15
Arabian gold, 53
Arabic talisman, 44
Aragon, cross-bows, 61
Arbalète, 59; à bagnette, 70, 71; à cry, or à cric, 65, 69; à jalet, 70; à tours, 65, 66; Catherine de Médicis, 71; pied-de-biche, 65
Arbalètriers, municipal, 62
Arbalist, 60

PAGE

Archæological Museum, Univ. of Pa., 58
Arkansas Traveler, 75
Arrow-release, 147
Aryan migration, 51
Asia Minor archæology, 50
Atkinson, E., 18
Aubin, collection of Mexicana, 44
Audit of Treasurer's accounts, 52, 55, 148
Axon, W. A. E., 15
Ayme, L. H., 15
Aztecs, 119
Aztec zodiac, 25

Babylonian Niffer exploration, 103
Backhouse, R., 128
Bailey, B. N., 7–13
Bailey, W., 10, 13, 43, 47, 52, 89, 90, 96, 100, 113, 118, 131, 151; c 46, 51, 81; d 37; e 45, 96, 101, 134
Baird, J., o 59
Baker, A. G., o 40
Baker, J. R., 5, 6
Bancroft, H. H., 15
Banner stones and gorgets, 132
Barber, E. A., 15
Barrelled cross-bow, 70
Barton, Dr. R., 48
Basel Museum, 152
Batavia, Java, 83
Battle-axe, double-pointed, from St. Paul, Minn., 150
Baugh, D., 13
Baugh, S., o 47
Bayard, T. F., 5–10; o 152
Bayeux Tapestry, 60
Beach, Mrs. Moses S., 38
Beauchamp, W. M., 15
Bellucci, Prof., 46
Bement, C. S., 5–9; 13
Berendt, Dr. H. C., 78
Bergsöe, V., 15

PAGE

Bering Straits: intercontinental trade, 29; map, Pl. I, 30
Bertrand de Guesclin, 64
Bessemer, Sir H., 157
Betterton, Md., Indian relics, 38
Bierdimfl, 160
Blumenbach medal, 152
Boas, F., 15
Boat-shaped stones, 132
Bockius, C. H., 125
Bola, 109; from Bolivia, 149
Bolivian: bolas, 149; bronze tomahawk, 150; miniature objects, 133; prehistoric copper object, 148; prehistoric snuffing tube, 106; quipus, 125; slings, 126
Bologna Museum, 153
Bolton, H. C., 15, 18
Bolts, 72
Bora, an Australian ceremony, 111
Boro Budur Temple, Java, 83, 85
Borton, E. M., 18
Boulogne-sur-mer Museum, 152
Bourke, Capt. J. G., 18
Bowker, R. R., 18
Bowl game of the Tobique (Amalecite) Indians, 130
Bows: From Japan, India, Tibet, Tartary, Scythia, Rome, England, 147; of the North American Indians, 148
Boyle, D., 111
Bradlee, Rev. Dr. C. D., 18
Brambanan, Java, 83
Bremen Museum, 152
Brinton, Dr. D. G., 5-12, 18, 22, 49, 81, 92; c 26, 34, 36, 40, 41, 43, 44, 46, 47, 50, 52, 75, 77, 89, 94, 95, 100, 102, 105, 108, 111, 123, 128, 135, 159; d 25, 32, 36, 57, 89, 91, 93, 98, 108, 111, 118, 122, 124, 130, 131, 135, 151, 152; e 77; g 50; medal, 135
Broadhead, L. W., 15
Brock, R. A., 5-12, 15, 18, 22
Brock, R. C. H., 13, 18
Bronze tomahawk from Bolivia, 150
Brooks, Rev. W. H., 15
Brown, J. M., 15
Brühl, G., 15
Brunswick cathedral frescoes, 61
Bryant, H. W., 15
Bulliott, J. G., 15
Burial mounds, Japanese, 138
Butler, Prof. J. D., 5-12, 15, 18

Camail de mailles, 72
Canadian emblematic mound, 111
Cannizzaro, T., 15
Carolina war axe, 132
Carreau assommeur, 72
Carr, W. W., 116
Carutti di Cantogno, 15
Casa grande, Chihuahua, Mex., copper turtle, 35
Catlinite quarry, 54
Cave exploration, 95
Ceremonials, 152
Chaldi, 50
Chama, Guatemala, mounds, 103
Chandi Sewu, Java, 83
Chapel de fer, 72
Charlemagne's crown, 150
Charles VII, cross-bows, 62
Chattauta, Tenn., inscriptions, 47
Chausses, 73
Chiapas, Mexico, miniature objects, 131
Chicago World's Fair, 45; medal and diploma to N. & A. Society, 112
Childs, G. W., 18
Chinese and Accadian, 49
Chinese coins and medals, 23; popular literature in the U. S., 23; romantic literature in the U. S., 33
Chiriqui coast copper terrapin, 35
Cholula, Mexico, vase and pyramid, 90
Chukchi, 29, 30
Clark, C. D., 7-13, 52, 58, 99, 148
Clark, C. H., 13
Clarke, R., 15
Coates, J. H., 5, 6
Cohen, C. J., 13, 150
Colburn, Jere., c 36
Colket, C. H., 13
Collins, T. J., 122
Collum, Capt. R. S., c 24; 95
Cologne Museum, 152
Colombia, S. A., gold wire ornaments, 36
Columbian Exposition at Chicago, 45; medal and diploma, 112
Columbia University, 22
Comfort, Dr. A. J., 15
Congo idol, 44
Constantinople grand bazaar tablet, 23
Constanz, Dr., 152
Cope, G., 15
Copper age, so-called, 108
Corea, 82
Corean coins, 120; games, 79; name tablet, 126

PAGE
Cortesianus, Codex, 78
Cournault, C., 15
Cozumelhualpa, 77
Cramp, C. H., 13
Cramp collection, 80
Cramp, H. W., 13
Crawford, J. U., 129
Cressy battle, 64, 147, 148
Cross-bow, The, 59
Crowns, 150
Culin, S., 5–13, 18, 22, 33, 39, 44, 45, 57, 81; c 23, 26, 33, 45, 46, 79, 96, 101, 118, 122, 127, 152; d 75, 91, 104, 108, 109; e 26, 57, 80, 90, 91, 93, 106, 107, 118, 119, 124, 126, 129, 130, 131, 135, 159, 160; g 45, 46.
Cushing, F. H., 15, 79, 80, 109, 149; c 132; d 99, 130, 131, 133.

Dakota mounds, 111
Dana, C. E., 11–13; c 123, 150; d 26, 117, 124, 133, 148; e 94, 107, 110, 159.
Daniel, Miss A., 155
Daniel, Père, cross-bows, 62
Darling, Gen. C. W., 15, 18, 22
Da Silva, Chev. I., 15
Davenport, H., 15
Davids, R. W., 13, 152
Davis, R. S., 13
Davis, W. W. H., 15
Day, F. M., c 95
Dean, J. W., 15, 18
Deans, J., 15
De Beaujeu, M., 18
De Bellay, W., 63
De Charency, Cte H., 15
De Clève, J., 15
De Costa, B. F., 15
Degeneration of American Indians, 118
De la Couperie, 49
De Leon, C., 119
Delhi, India, bow 147
Del Már, A., 15
De Madrazo, P., 16
De Olaguibel, M., 15
De Peyster, Gen. J. W., 5–12, 15, 18
De Rochambeau, Marquis A., 15
De Rosny, L., 16
Desaguliers, Dr., 127
Devilliers, L., 16
Dice-like games of one common origin in America, 130
Di Cesnola, Gen. L. P., 16
Dieppe Museum, 152

PAGE
Dieseldorf, 103
Digging, recent results, 102
Djokjokarta, Java, 83
Doggett, S. B., 18
Dolan, T., 13
Dolmens, Japanese, 138
Donors: to the library, 18; to the cabinet, 22
Domesday Book, 60
Donner, Dr. O, 16
Dorr, Dalton, 51, 55, 99, 101, 105
Dorsey, J. O., 18, 152
Doughty, F. W., 18
Dramas, mediæval and aboriginal, 26
Dresden Museum, 153
Drexel, A. J., o 47
Drexel, Mrs. J. D., 160
Drowne, H. T., o 135
Durand, Jos., 16
Durham Furnace stove plates, 127

Early prehistoric man in Europe, 57
Eckert, Capt. V., 128
Edelheim, C., 5–12; d 160; e 90, 91, 99, 101, 107, 134, 136, 159; g 90, 107.
Edwards, Col. R. S., e 113, 115; e 117, 118.
Egle, Dr. W. H., 16
Egyptian early race, 102
Egyptian explorations, 104
Egyptian stone carving, 41
Elizabeth, Queen, cross-bows, 62, 71
England's coat-of-arms, 124
English use of cross-bows, 61
Equipment of cross-bowman, 72
Ethnology, Bureau of, 146
Evans, Sir J., 15
Eyre, C., 22; g 45

Fans, 160
Farnum, G. L., 135
Farnum, J. E., 22, 122, 135; e 120; d 121; g 120.
Fejervary Codex, 153
Field, O., 16, 18
Flag of the U. S., 148
Flinders-Petrie, 42, 102
Flowers, Capt., 127
Fluted stone axes, 43
Forchheimer, E., 16
Förstemann, Dr., 75
Fowke, Gerard, 98
French, A. D. W., 18
Friedenwald, H., d 26
Froissart, 64, 69
Fujiwara Hiromoto's nagatachi, 139

PAGE
Fukuma nagatachi, 140
Furness, F., 13

Gallinger, J. H., 18
Gans, L., 13
Garrison, Rev. J. F., 5, 6
Gastraphetes, 59
Gatschet, A. S., 16, 18
Genouillères, 73
German use of cross-bows 61
Genoese cross-bowmen, 62, 64, 69
Gerard de la Warre, 61
Giglioli, H. H., 16
Gilbertson, E., 126, c 137
Gill, Dr. T. N., 35
Gilman, D. C., 16
Glacial man, 47, 135
Glatz, A. H., 16
Goode, Dr. G. B., 5–9; o 110
Goodyear, Prof. W. H., 16
Gookin, F. W., 18
Gorgas, Lt. M. C., 29, 32, 33
Gorgets and banner stones 132
Gowland, W., 138
Green, Dr. S. A., 16, 18, 22; g 36
Greenough, E. W., 13
Griffin, Rev. G. H., 16
Grose, F., 59, 63
Guatemala art, 77: explorations at Chama, 103: pottery, 80
Gutekunst, F., 13
Guillaume le Breton, 69

Habel, Dr., 77
Hadi, Syad, 16
Haidah money 57
Halévy, 49
Hall, Dr. I. H., 55
Hamy, Dr. E. T., 16, 18, 129
Hance, A. M., 124
Harden, W., 16
Harrison, C. C., 13
Harrison, Dr. W. P., 18
Harshberger, Dr. J., e 59
Hart, C. H., 13; e 38
Haupt, Prof. P., 49
Hawaiian coins, 53; dice, 159
Hayden, Rev. H. E., 16, 18
Haynes, H. W., 16
Head, B. V., 16
Henkel, S. V., 18
Henry III, VII and VIII, cross-bows, 61
Herbage, Wm., o 36
Herbst, C. F., 16
Herndon, W. H., 16
Hickox, J. H., 16

PAGE
Hildebrand, H. O. H., 16
Himyarites, 53
Hind's foot cross-bow, 65
Hittites, 50, 82
Hockley, T., 5, c 27, 155
Holley, A. L., 157
Holmes, N., 16
Holmes, W. H., 34
Horn of copper, German, 125
Horner, Dr. F., Jr., 16
Horner, I., 5, 6, 11–13, 22, 118, 131; c 29, 130, 135, 155; d 119, 121, 122, 128, 130, 133, 147, 151; e 27, 32, 112, 124, 135, 136, 160; g 118.
Hotham Inlet, 31
Houston's engraving of Washington, 38
Hovelacque, A., o 110
Howard, J. J., 16
Huehuetenango vase, 100
Hugnet-Latour, Maj. L. A., 16
Humboldt, A. von, 133
Hutchinson, C. H., 13
Hyrcanus, John, coin, 44
Hyvernat, 50

Imhoof-Blumer, F., 16
Indian fish hooks, 128; pits near Allentown, Pa., 34
India: gold, 121; Southern, ornaments, 101
Innocent II and III, 60
Inscriptions, aboriginal, 47, 51
Intercontinental trade of Bering Straits, 29
Iron crown of Lombardy, 151
Iroquois symbolism, 36
Italian dagger, 133
Iüngerich, H., 5–13, 22, 110; d 91; e 101, 104; g 98.

Jackson, Dr. H. R., 18
Jade, 142
Jaffa talisman, 26
Japanese: Armor, 124; art work in metal, 145; bows, 147; dolmens and burial mounds, 138; origin of American Indians, 24; race, origin of, 81; paper money, 124; prehistoric swords, 137; sword certificates, 142; sword engraving, 144; sword experts, 142; sword inscriptions, 142; swords, 123, 124, 126, 137; sword signatures, 142; sword smiths, 143; sword study, 144,

PAGE
Java, 83
Jayne, Dr. H., 13
Jenkins, H. M., 16
Jenks, J. S., 13
Jimson weed smoking by N. A. Indians, 112
Johnson, T. L., 18
Jones, C. C., Jr., 5, 6, 18; o 52
Jones, C. E., 18
Jones, Dr. J., 5-9, 18; o 108
Jordan, F., Jr., 5-13, 41, 49; c 38, 91; d 42.

Karabacek, Prof. J., 16
Katana, 138
Keary, C. F., 16
Kêi Islands symbols, 37
Ken, 138
Kendall, Dr. R. C., 122
Kenner, Dr. F., 16
Kervey, H. R., 18
Kip, Rt. Rev. W. I., 5, 6; o 46
Koehler, S. R., 16, 18
Kokolik, 31
Konstostaulas, A., 16
Korean games, 79
Kotzebue Sound, 31
Krause, Prof. W., 16
Krauss, Dr. F. S., 16
Kümmel, Dr. H. B., 135
Kunz, G. F., 90

Lamborn, Dr. R. H., 22, 80, 81; c 54; e 35, 37, 54, 89; g 39; o 92, 157.
Langenheim, F. D., 5-13, 22, 52, 77, 98, 99, 105, 110, 124, 153; c 39, 41; 51, 52, 55, 100, 101, 106, 109, 134; d 148; e 47, 54, 75, 129; g 122, 152.
Latch cross-bow, 65, 69
Latrobe, Hon. J. H. B., 5
Laubach, C., c 127
Lea, H. C., 13
Leach, F. W., 13
Lehman, E. W., 5-8
Leibert, Rev. E., 16
Lemoine, J. M., 16, 18
Levasseur, E., 15, 18
Lewis, G. A., 5-13, 152; d 124, 148; e 75, 148.
Lewis, H. W., 13
Lewis, J. F., 13
Lewis, Hon. V. A., 18
Leyden, siege piece, 27
Lincoln, F. W., 16
Lindsley, Dr. J. B., 16, 18

PAGE
London, Eng., Library Committee, 96
Long, Rev. A. L., 16, c 23
Longstreth, W., 5-13
Loring, Gen. C. G., 16
Loubat, Duke de, 15, 129
Low, L. H., 16
Low, Hon. S., 18
Lubbock, Sir J., 16
Lyman, B. S., 5-13, 34, 46; c 137; d 82, 93; e 123, 124, 126.

Macauley, F. C., 22, 119; g 46; o 108
McCartee, Dr. D. B., 123
McGee, Prof., 92
McGuire, J. D., 41
Macungie, Pa., Indian pits, 34
Machado, A., 16
Madden, F. W., 15
Madrid Historico-American Exhibition, 1892, 23, 33, 40, 43, 45, 47.
Mallery, Col. G., 18, o81
Mancos Cañon, Col., sling stones, 109
Manika-land primitive dress, 121
Man's antiquity in America, 46
Mantelet, 67, 68
March, Prof. F. A., 16
Marignan battle, cross-bows, 62
Market St., bridge monument, Phila., 81, 89, 90, 96, 113
Marvin, W. T. R., 16
Mashonaland, 53
Mason, O. T., 16
Matras, 72
Matsumoto, J. K., c 81
Maya, 97
Mayan pottery, 100
Medal for the Philadelphia post-office, 115
Medal presented to Dr. Brinton, 135
Medal: Wyoming massacre, 36; Peabody Educ. Fund, 36
Meigs, E., 124
Meili, J., 18, g 134
Mein, B. V., 5-13
Meltzl de Lomnitz, Dr. H., 16
Members: Corresponding, 15; honorary, 15; resident, 13
Memorial Hall Pa. Museum, 51, 52, 55, 77, 81, 99, 101, 105, 134.
Mercer, H. C., 13, 18, 35, 95, 100, 103; c 57, 75, 96, 111.
Mercur, R. A., 16
Merzbacher, Dr. E., 16
Metal work, prehistoric, 105
Meyer, C., 16

PAGE

Mexicana. 44
Mexican: Book of Days, 90; exploration at Teotihuacan, . . . 103
Meyrick, Sir S., ... 60, 68, 69
Mickley medal, ... 153
Micmac game wobunarunk, . . . 131
Miller, Mrs. W. H., ... 132
Milne, C. J., ... 13, 47, 58
Milne, D., ... 5–13, 94
Miniature objects in Bolivia and Zuñi, ... 133
Mint, U. S., Director, ... 15
Mitchell, A., ... 16
Montezuma's bow and robe, . . . 152
Moore, C. B., . . 13, 18, 22; c 83; g 50
Morgan, J., ... 127
Morris, J. T., 7–13; c 104, 121, 147, 150; d 56, 109, 119, 122; e 41, 44, 57, 75, 104, 109, 122, 125, 147, 148, 150.
Morse, E. S., ... 16, 18
Morton, Dr. S. G., ... 132
Mott, H., ... 16
Moulinet, ... 67
Mound builders' pottery, ... 80
Mounds: Burial, in Japan, 138; emblematic, in Canada and elsewhere, ... 111
Much, Dr. M., ... 16
Museums of Europe, ... 152
Musical stones of nephrite, . . . 133
Myer, I., ... 13, 18

Nadaillac, Marq. de, ... 16
Nagatachi, ... 138, 139
Necrology, ... 155
Nephrite, ... 30
Nickajack and Lookout Mountain caves, ... 57
Nicolaysan, N., ... 16
Nordenskjöld, ... 29
Noritsune's nagatachi, ... 139
Northmen in America, ... 98
Norton, C. E., ... 16
Numismatic and Antiquarian Society's: Collections, 23, 33, 39, 47, 51, 52, 55, 58, 77, 81, 98, 99, 100, 101, 105, 108, 110, 112, 125, 134; history and aims, 94, 135; library, 90; Proceedings, 36, 110: quarters, 46, 56, 58; real estate, ... 90, 99
Nuremberg peace pennies, ... 106
Nuttall, Mrs. Zelia, ... 16, 35

Officers elected, 5–12, 55, 90, 101, 119, 134, 160.

PAGE

Ohio mound relics, ... 119
Ophir, ... 53
Orange Free State prehistoric diamond mine, ... 52
Origin, one common, of dice-like games in America, ... 130
Owen, Sir P. C., ... 15

Paine, N., ... 16, 18
Pantograph, ... 54
Parma shield 69
Patterson, J. S., ... o 94
Patterson, J. W., ... 15
Pavise, ... 67
Peace pennies, Nuremberg, . . . 106
Peabody Education Fund medal, . 36
Peabody Museum, ... 47
Peirce, G., ... 13
Peñafiel, A., ... 16
Penn's charter seal, ... 128
Penn Club, ... 93
Pennsylvania German folk lore, . 75
Penna. Museum and School of Industrial Art, ... 56, 58
Penna. Museum at Memorial Hall, ... 51, 52, 77
Pepper, W. P., letter, ... 58
Perry, Hon. A., ... 5–12
Perry, Rt. Rev. W. S., ... 5–10, o 152
Persian talismans, ... 44
Perugia, a Day at, ... 46
Peruvian copper axes, ... 132
Pfahler, A. E., ... 13
Pfahler, W. H., ... 14, 160
Phallic emblems, ... 46
Phallus, ... 99
Philadelphia: Ancient, coin, 76; Library Co., 52; post-office medal, 115; post-office organization, ... 115
Philip Augustus, ... 60
Phillips, W. B., ... 14
Phillips, G. M., ... 18
Phœnician: glass, 57; gold, . . . 53
Piccolomini Octavius, ... 107
Piette, E., ... 18
Pinart, A., ... 124, 152
Pipe among the N. A. Indians, . 112
Platt, F., 7–12, 14, 52, 55, 89, 90, 99, 100, 118, 131; c 92; d 42, 49, 53, 57, 91.
Playing cards from Nuremberg, . 159
Poillon, W., ... 16, 22
Poinsett collection, ... 89
Point Hope, ... 31
Point Lay, ... 31
Polignac, Count, ... 127

PAGE
Pomjalowski, Prof. I. V., 16
Ponce de Leon, N., 16
Pope, A. A., 18
Port Clarence, 31
Portioli, Attilio, o 36
Post, Dr. G. E., 16
Postalacca, A., o 126
Powhatan Indian quarry figures, 79
Prehistoric metal work, 105
Price, E. K., 5-12, 14, 158
Price, J. S., 5-10, 100; o 126, 158
Prince of Wales Indians, 31
Prod, 70
Publication of the Proceedings, 36
Putnam, E., 18
Putnam, F. W., 8-12, 16, 18, 47, 90

Quarrels, 72
Quipu from Bolivia, 125

Ramage, John, portrait of Washington, 38
Randall, J. C., 5-12, 22; e 91; g 134
Read, C. H., 16, 153
Rebaudequins, 66
Rhodios, M., 59
Richard I., 60
Riggauer, Dr. H., 16
Riggs, W. H., 69
Robinson, G. E., 16
Roest, T. M., 19, 22; o 152
Rogers, Rev. C., 16
Rogers, H., 5-12, 14, 33, 52, 55, 58, 81, 99, 106, 122; c 76; e 23, 79, 81, 94, 98, 124; g 27.
Rolling-purchase cross-bow, 65, 66
Roman, ancient: ring, 38; table ware, 89
Rosengarten, J. G., 32
Ross, Betsy, 148
Runic inscriptions in America, 98
Rupert, Prince, 127
Ruschenberger, W. S. W., 5-8; o 95, 156.

Sahara, superstition, 160
Salisbury, R. D., 93
Salisbury, S., 16
Samarang, Java, 83
Samoan fire sticks, 54
Sanchez, J., 16
Sandham, A., 17
Sassanide inscription, 54
Saville, M. H., d 152
Savage's portrait of Washington, 38
Sayce, Prof. A. H., 50, 82
Scarabæus imitation, 51
Schlegel, Dr. G., 19, 111
Schliemann, Dr. H., 102

PAGE
Schongauer, M., painting on glass, 136
Scott, J. M., 5-12, 14
Scott, L. A., 5-9, o 110, 155
Seals, 123
Seletti, E., 17, 19
Seltman, E. J., 19
Sergeant, J., 159
Sergi, Prof. G., 17
Serrure, R., 17
Seymour, F. H., 17, 19
Sharpless, A., 17
Sharpless, P. P., 17
Shichiyô Ken, 138
Shiri Ken, 138
Shomu, Emperor, 139
Singapore Chinamen, 99
Sinjirli inscriptions, 51
Sinker stones, 149
Sioux (N. Dakota) crystal jewel, 89
Six, Dr. J. P., 17
Slafter, Rev. E. F., 17, 19
Slings in Bolivia, 126
Sling-stones, 108
Smedley, S. M., o 81
Smith, Sir J., 63
Smith, Dr. J. D., 136, 160
Solo, Java, 83
Sommerville, Prof. M., 5-12, 14, c 46, 55, 101, 160; d 39, 53, 55, 57; e 39, 43, 44, 54, 75, 99, 104, 106, 107.
Starr, E., 14
Starr, Prof. F., 103, 131
Starr, Geo. E., 130
Stars, five- and six-pointed, 148
Stevens, J. A., 17
Stevenson, C., 7-12, 14, 52, 58, 90, 99, 100; c 59; d 108, 148; e 39, 91, 95, 106, 118, 123, 124, 125, 133, 135, 136, 148, 159.
Stiles, Dr. H. R., 17
Storer, Dr. H. R., 19
Story, W., 89
Stramonium smoking by N. A. Indians, 112
Strong, Dr. H. A., 17
Submergence of seacoast and human relics, 92
Suger, Abbé, 60
Susquehanna pictographs, 49
Sutton, L. J., 22; g 134
Sweeny, Dr. R. O., 17
Sword: Curving in Japan, 141; English, 44; forging in Japan, 141; grinding in Japan, 140; tempering in Japan, 141
Szombathy, J., 17

PAGE
Tachi, 138
Taine Hippolite, o 46
Takahashi, K., 123
Takayanagi Tozo, 22; g 75
Talismans, Persian and Arabic, 44
Tamakazari sword, 139
Tartar bow, 147
Tatman, C. T., 19
Taylor, G., 127
Teotihuacan: Ruins, 103; cemetery, 118
Teprocalli inscription, 50
Thomas, T. H., 17
Thorsteinson, A., 17
Thousand Temples, Java, 83
Thruston, G. P., 17
Tiahuanaco, Bolivia: snuffing-tube, 106; collections, 109
Tibetan bow, 147
Titicaca ruins, 119
Tobacco in China, 111
Tobacco smoking among N. A. Indians, 112
Tobique (Amalecite) Indian bowl game, 130
Todd, M. H., 14
Toltecs, 119
Tomahawk, bronze, from Bolivia, 150
Tooker, W. W., 17, 19
Toppan, R. N., 14, 19
Tower, C., 14, 35
Townsend, J. W., 14, e 96
Transmission of games and customs from one centre, 130, 133
Trask, W. B., 17
Trau, F., 17
Trenton, N. J., Indian relics, 46, 135
Troy excavations, 102
Trumbull, Hon. J. H., 5–10, o 126
Tsurugi, 138
Tuckerton Hummock, N. J., 91
Tylor, Dr. E. B., 17
Tyre, 60

Uhle, M., 106, 119; e 125; e 132, 148
United States coinage, 90
United States Mint Director, 15
University of Pa. Archæological Museum, 58, 80, 90

Valentinian II, coin, 38
Vera Cruz, Pa., Indian pits, 34

PAGE
Verstegan, 59
Viollet-le-Duc, 69
Viretons, 72
Von Dittmar, 39
Von Ernst, C., 17
Von Hoefken, R., 19
Von Raimann, Dr. F., 17
Von Tiesenhausen, Prof. V., 17, 19
Voorhees, D. W., 19
Vors, F., 17

Wagner, H. D., 14
Walters, J. B., 117
Wampum, 130
Washington's coat of arms, 148; portrait by Ramage, 38
Wauvermans, Lt.-Gen. H., 17
Whyte pictures of Va. Indians, 79
Widow's mite coin, 44
Wilder, H. M., 51, 55, 77, 105
William of Tyre, 60
Williams, J. F., 17, 19
Williams, S., 127
Wilmersdörffer, M., 17
Wilson, Sir D., o 34
Winburg, Orange Free State, prehistoric diamond mine, 52
Winkelried, Arnold, medal, 45
Winkler, Prof. H., 82
Winks, Rev. W. E., 17
Winsor, J., 19, o 130
Winthrop, R. C., 5–7, 90, o 89
Wistar, R., 156
Wobunarunk, a Micmac game, 131
Wolbert, C. E., 14
Wood, I. F., 19; o 110
Woodside, G. D., 14
Wright, J., 14
Wyoming Historical and Geological Society, g 36
Wyoming massacre medal, 36

Yamato race, 81
Yucatan: Caves, 95, 96, 103; Mayas, 118
Yukiyoshi, Japanese swordsmith, 139

Zalinski, Capt. E. L., e 137
Zaragosa, J., o 125
Zululand snuff, 121
Zuñi: Miniature objects, 133: property fetiches, 131

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FOR THE YEARS 1899-1901

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CONTENTS.

PAGE
Officers and Committees for the Years 1899–1902, ... 5–8
Honorary Members, ... 9
Resident Members, ... 9
Corresponding Members, ... 10
Donors to the Library, ... 13
Donors to the Cabinet, ... 16
Minutes, 1899 : January, February, ... 17
March, ... 18
April, ... 19
May, ... 20
October, ... 21
November, ... 22
December, ... 23
Minutes, 1900 : January, ... 25
February, March, ... 26
April, ... 27
May, ... 28
October, November, ... 29
December, ... 30
Minutes, 1901 : January, February, March, ... 31
April, ... 32
May, October, ... 33
November (Peruvian portrait-vases), . . . 35
December, ... 36
Daniel Garrison Brinton, M D.; Obituary Address; by Inman Horner, ... 37
Early Ordnance; by Cornelius Stevenson, ... 45
The Great Seal of England; by Charles E. Dana, ... 49
The Coinage of the Ancient Greeks; by W. N. Bates, ... 73
Discussion of the Proceedings of 1892–98; by Edward Gilbertson, ... 85
A Hebrew Omer of the Year 1800; by Charles J. Cohen, . . . 89
Letters from Sicily; by John T. Morris, ... 93
Black Patina on Japanese Iron Sword-guards; by Edward Gilbertson, ... 103

PAGE
Four Turkish Coins; by Edward Gilbertson, ... 105
Coin Cabinet; by Edward Gilbertson. 107
Falconry; by Charles E. Dana, ... 109
The Long-bow; by Charles E. Dana, ... 119
An Antique Glass Medallion; by John T. Morris, ... 137
The Coinage of the Ottoman Sultans; by Edward Gilbertson, . 139
Earliest Dates on Coins; by Richard W. Davids, ... 145
Some Literary and Antiquarian Frauds; by Charles E. Dana, . 149
Pennsylvania German Stove Plate; by Henry C. Mercer, . . . 171

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March, Prof. Francis A., Easton, Pa.
Marvin, W. T. R., Boston, Mass
Mason, Otis T., Washington, D. C.
Meltzl de Lomnitz, Dr. Hugo, Klausenburg, Austria.
Mercur, Rodney A., Towanda, Pa.
Merzbacher, Dr. Eugen, Munich, Germany.
Meyer, C., Hamburg, Germany.
Mitchell, Arthur, Edinburgh, Scotland.
Morse, Prof. Edward S., Salem, Mass.
Mott, Henry, Montreal, Canada.
Much, Dr. M., Vienna, Austria.

Nadaillac, Le Marquis de, Paris, France.
Newcombe, Dr. C. F., Victoria, B. C.
Nicolaysen, N., Christiania, Norway.
Norton, Charles Eliot, Cambridge, Mass.
Nuttall, Mrs. Zelia, Dresden, Germany.

Paine, Nathaniel, Worcester, Mass.
Peñafield, Antonio, Mexico.
Poillon, William, Chicago, Ill.
Pomjalowski, Prof. Ivan V., St. Petersburg, Russia.
Post, George E., M. D., Smyrna, Turkey.
Putnam, Prof. Fred. W., Cambridge, Mass.

Read, Chas. H., London, Eng.
Riggauer, Dr. Hans, Munich, Germany.
Robinson, Geo. E., Cardiff, Wales.
Rogers, Rev. Charles, London, Eng.
Salisbury, Stephen, Worcester, Mass.
Sanchez, Jesus, Mexico.
Sandham, Alfred, Montreal, Canada.
Seletti, Emilio, Milan, Italy.
Sergi, Prof. Giuseppe, Rome, Italy.
Serrure, Raymond, Paris, France.
Seymour, Frederick H., Detroit, Mich.
Sharpless, Alfred, West Chester, Pa.
Sharples, Philip P., West Chester, Pa.
Slafter, Rev. Edmund F., Boston, Mass.
Stevens, John Austin, New York, N. Y.
Stiles, Henry R., M. D., Hillview, Warren Co., N. Y.
Strong, Herbert A., LL. D., Melbourne, Australia.
Sweeny, Robert O., M. D., Duluth, Minn.
Szombathy, Josef, Vienna, Austria.

Thomas, Thomas H., Cardiff, Wales.
Thorsteinson, Arni, Reykjavik, Iceland.
Thruston, Gates P., Nashville, Tenn.
Tooker, Wm. Wallace, Sag Harbor, L. I., N. Y.
Trask, Wm. Blake, Boston, Mass.
Trau, Franz, Vienna, Austria.
Tylor, Dr. Edward B., Oxford, Eng.

Von Ernst, Carl, Vienna, Austria.
Von Tiesenhausen, Prof. Vladimir, St. Petersburg, Russia.
Vors, Frederick, New York, N. Y.

Wauvermans, Lt.-Gen. Henry, Brussels, Belgium.
Wilmersdörffer, Max, Munich, Germany.
Winks, Rev. William E., Cardiff, Wales.

DONORS TO THE LIBRARY, 1899-1901.

(I) INDIVIDUALS.

Atkinson, Edward, Boston, Mass.

Bowditch, C. P., Cambridge, Mass.

Clark, Charles D., Philadelphia.

Dana, Charles E., Philadelphia.
Darling, Gen. C. W., Utica, N. Y.
De Costa, Rev. B. F., New York, N. Y.
De Peyster, Gen. J. Watts, Tivoli, N. Y.
Deshayes, E., Paris, France.

Edelheim, Mrs. Carl, Philadelphia.

Low, Lyman H., New York, N. Y.

Meili, Julius, Zurich, Switzerland.
Mercer, Henry C., Doylestown, Pa.
Morse, Prof. E. S., Salem, Mass.

Parsons, Jacob Cox, Brooklyn, N. Y.
Paterson, Siegwart, Kristiania, Norway.
Piette, Ed., Rumigny, Ardennes, France.
Potter, E. T., Newport, R. I.
Putnam, Prof. F. W., Cambridge, Mass.

Swan, C. H., Jr., New York, N. Y.

Tooker, Wm. Wallace, Sag Harbor, N. Y.

Von Hoefken, Rudolf, Vienna, Austria.

Williams, R. P., North Cambridge, Mass.

(II) SOCIETIES AND INSTITUTIONS.

IN FOREIGN COUNTRIES.

China Branch of the Royal Asiatic Society, Shanghae, China.

Bataviaasch Genootschap van Kunst en Wetensch., Batavia, Java.

L'Institut Egyptien, Cairo, Egypt.

Société Impériale Archéologique, St. Petersburg, Russia.

Société Finno-Ougrienne, Helsingfors, Finland.

Kongl. Vitterhets Historie och Antiq. Akad., Stockholm, Sweden.

Numismatische Gesellschaft, Berlin, Germany.

Alterthums-Verein, Munich, Germany.

Numismatische Gesellschaft, Vienna, Austria.

Hrvatsko Starinarsko Druztvo, Knin, Dalmatia, Austria.

La Gazette Numismatique, Brussels, Belgium.

Cercle Archéologique de Mons, Belgium.

Alliance Scientifique Universelle, Paris, France.

Musée Guimet, Paris, France.

Société d'Anthropologie, Paris, France.

Société des Américanistes, Paris, France.

Société d'Ethnographie, Paris, France.

Société d'Emulation des Côtes-du-Nord, St. Brieuc, France.

Philosophical Society of Glasgow, Scotland.

Cambridge Antiquarian Society, Cambridge, Eng.

Numismatic Society, London, Eng.

South Kensington Museum, London, Eng.

R. Society of Antiquaries of Ireland, Dublin, Ireland.

Société de Numismatique et d'Archéologie de Montréal, Canada.

IN THE UNITED STATES.

Bangor Historical Society, Bangor, Me.

Essex Institute, Salem, Mass.

Peabody Museum, Cambridge, Mass.

Rhode Island Historical Society, Providence, R. I.

American Museum of Natural History, New York, N. Y.

American Numismatic and Archæological Society, New York, N. Y.

Lake Mohonk Arbitration Conference, Mohonk Lake, N. Y.

New Jersey Historical Society, Newark, N. J.

Public Record Commission, Trenton, N. J.

American Philosophical Society, Philadelphia, Pa.

Fairmount Park Art Association, Philadelphia, Pa.

Geographical Society, Philadelphia, Pa.

Penna. Museum and School of Industrial Art, Philadelphia, Pa.

Penna. Prison Society, Philadelphia, Pa.

University of Penna. Dept. of Archæology, Philadelphia, Pa.

Historical Society of Dauphin County, Harrisburg, Pa.

American Historical Association, Washington, D. C.

Smithsonian Institution, Washington. D. C.

United States Bureau of Education, Washington, D. C.
United States Bureau of Ethnology, Washington, D. C.
United States Civil Service Commission, Washington, D. C.
United States Department of Agriculture, Washington, D. C.
United States Department of State, Washington, D. C.
United States Geological Survey, Washington, D. C.
West Virginia Historical and Antiquarian Society, Charleston, W. Va.
Western Reserve Historical Society, Cleveland, O.
Ohio Archæological and Historical Society, Columbus, O.
Field Columbian Museum, Chicago, Ill.
Wisconsin State Historical Society, Madison, Wis.
Minnesota Historical Society, St. Paul, Minn.
Academy of Science, St. Louis, Mo.
Kansas Academy of Science, Topeka, Kan.
Colorado College Scientific Society, Colorado Springs, Col.

DONORS TO THE CABINET 1899-1901.

Columbia University, New York, N. Y.

Gilbertson, Edward, Ilfracombe, Eng.

Langenheim, F. D., Ardmore, Pa.

Meili, Jul., Zurich, Switzerland.

Morris, John T., Philadelphia, Pa.

Société de Numismatique et d'Archéologie de Montréal, Canada.

PROCEEDINGS.

1899.

JANUARY 5TH.

Mr. John T. Morris, Vice-President, exhibited a stop-watch made by Hahn, of Stuttgart, about 1780. Also a terra-cotta tobacco pipe, said to have been found, at a depth not now known, in the marl pits near Woodstown, N. J., in digging marl. It was given to Mr. Morris about twenty years ago. He, however, doubts the story of the discovery. The pipe was thought to be Swedish. He also exhibited a "keep-your-temper-farthing."

Mr. John F. Lewis exhibited a pair of boarding cutlasses in a single scabbard, probably of the early part of this century. Also a gold snuff box, partly enameled in blue, brought from China many years ago by his father. It has a music box at one end and a watch at the other. It was made in Europe, probably in Switzerland or France.

Mr. F. D. Langenheim exhibited an English trades token of 1820, presented to our collection.

A letter was read from the Trustees of Columbia University, presenting a bronze medal struck in honor of Professor Drisler's fifty years of service. A vote of thanks was passed.

FEBRUARY 2D.

Mr. Inman Horner mentioned that he had received a letter from President Brinton, now at New Orleans and in good health.

Mr. John T. Morris exhibited a Japanese pocket clock or watch; two rupees of 1840, one with "the booby head"; and a medal.

Mr. Horner exhibited a gold coin of Augustus.

Mr. Carl Edelheim exhibited an engraved gem, of sard, with the design of a military contest, warriors with shields; also a small Chinese agate saucer, carved on white maculation, with a fish.

Prof. Maxwell Sommerville exhibited a photograph of the city of Timgad, which he had lately visited on his way to the Sahara. He made some remarks on his journey, and described certain customs of the Touaregs. He exhibited two Touareg pouches or traveling bags, a purse made of lizard skin, a pair of shoes, a wooden lock, and a door bar with an iron ring; also a pair of brass tweezers used by the women to remove hair. He furthermore exhibited a cloth painted with a fortune-telling chart. which he had purchased in Japan.

Mr. Culin said that the cloth was of Thibetan origin, and almost identical with a Thibetan divining roll brought home from Thibet by the brothers Schlagintweit, published in *Buddhism in Thibet*, and now preserved in the Museum für Völkerkunde in Berlin, where Mr. Culin had examined it last summer. He added that he had published an explanation of one portion of the chart or diagram, and had identified the process of using it with a common game. He hoped to elucidate the subject further in a work he was now preparing for the press. In conclusion, he spoke warmly in praise of the scientific value of the material collected by Professor Sommerville for his exhibit in the Museum of the University of Pennsylvania.

MARCH 2D, 1899.

Mr. Culin exhibited a gold medallion of the Sons of Washington, inclosing on one side an engraved portrait of Washington, after Stuart, probably engraved by Edwin, with the engraved legend "T. C. Carpenter, February 22, 1810"; and on the reverse "Sons of Washington." The medallion was loaned for exhibition by Mrs. Lucy Wharton Drexel, and was made the subject of a communication by Mr. Culin. He gave an account of the Sons of Washington from newspapers and other records of the time.

Mr. John T. Morris exhibited an embroidered Japanese fan, with the design of a peacock, made by Nishimura at Tokio.

Mr. Culin exhibited a number of Japanese fans recently collected by Mr. A. de Potter in Japan for Mrs. Lucy Wharton Drexel, and intended for her collection in the University Museum. Among them were a court fan, said to have belonged to the late mother of the present empress of Japan; a fan bought from a Buddhist priest in the temple at Shiba; a fan bought, after being used for dancing, from a Shinto priestess at Nikko; a fan bought from a Buddhist priest at Kiyoto; a fan used in dancing by a priestess at Nara; a modern Chinese painted fan with ivory faces, and an old Chinese painted feather fan. Mr. Culin also exhibited a Chinese folding-screen fan, brought from Canton about 1830, and presented to the University by Mr. John F. Lewis.

Mr. John F. Lewis exhibited a silver beer mug from Norway.

Mr. John T. Morris exhibited a Spanish dollar with the pillars of Hercules, and an amulet from Assouan, of amber glass, Nubian, or farther south.

Mr. W. H. Pfahler exhibited a set of the new coins issued by the French mint.

Mr. Harry Rogers, Treasurer, read the resignation of membership of Mr. J. Colvin Randall, in consequence of failing eyesight. Remarks were made on Mr. Randall's great knowledge of numismatics and his services to the science; but as his decision to withdraw from the Society could not be altered, his resignation was regretfully accepted.

April 6th, 1899.

Mr. Lyman called attention to a statement in the Philadelphia *Public Ledger* of April 3d, 1899, that the staircase of the poet Milton's house was bought by Richard Rush, United States Minister to England, when the house was torn down, and that he built it, with a silver plate inscription of the dates and facts, into his quaint country home, named Sydenham, near what is now Columbia Avenue and Sixteenth Street, Philadelphia. After the death of Mrs. Rush, Sydenham House was torn down, and it would be interesting to learn what has become of the staircase.

Mr. Culin spoke of the proposed arrangement of antiquarian collections in the new Museum of Science and Art of the University of Pennsylvania. He said three rooms in the basement had been assigned to such objects. One would be devoted to historical objects and archives of the University, another to the representation of a colonial hall, and the third to a living room of an humble family of the same period. The collections of our Society deposited in the Museum would in part be assigned to those rooms.

Mr. Inman Horner exhibited two daggers and a trident spear used in pig sticking in Morocco.

Mr. Lyman exhibited a hunting sword, which Mr. Charles D.

Clark pronounced to be a German Jaeger's or forester's sword of about the middle of the present century.

Mr. Inman Horner exhibited an illuminated document of the Spanish Inquisition.

Prof. Maxwell Sommerville exhibited a Thibetan priest's sun dial, consisting of a wooden octagonal staff, about three feet long, inscribed with Thibetan numerals, with a wooden pin, which was inserted in holes near the top.

Professor Sommerville also exhibited a series of Hindoo religious pictures of various gods.

Mr. Culin exhibited a Japanese war fan, *tessen*, recently purchased by Mrs. Drexel for the University Museum.

Dr. A. H. Cleveland, a guest, exhibited a California Mission Indian hemispherical basket, about twenty inches in diameter, with a device worked in brown, alike on both sides. He had taken the basket to the University Museum to get information about the inwoven designs. Mr. Culin had identified them, and had requested that the basket be exhibited at our meeting. Mr. Culin showed that the patterns were copied from a Mexican silver dollar of 1716, somewhat conventionalized and enlarged to the size of the bottom of the basket. Around, outside, were five keystones surmounted by a crown and bearing the arms of Spain.

Mr. Warwick, a guest, exhibited an iron sword or knife, about twenty-four inches long, with a broad blade and a curved cutting edge, but a nearly straight back. The handle was in one piece with the blade, and four-sided and open in the centre, with the sides each set with two intertwined silver serpents. At the extreme end there was an ornament like a bird's beak, inlaid with gold. The sword had been dug up in Southern Mexico. Its material indicated that it was made subsequent to the Spanish conquest, but the form, and especially the designs on the handle, were Mexican.

MAY 4TH, 1899.

Mr. Culin said his attention had lately been called to certain pitholes lined with brick on the farm of Julius Norfleet, on Pungo Creek, near Belhaven, N. C., and exhibited photographs of the pits and a brick, and some fragments of Indian pottery found on the surface near. The pits are said to contain a deposit of lime at the bottom, to a depth of about four inches. Mr. Culin was uncertain whether the remains were of Indian origin or of the time of white occupation. No opinion was expressed by the members present. Mr. Culin hoped to give further information about the pits at a future meeting.

Mr. F. D. Langenheim, Curator of Numismatics, exhibited a one- and a two-centime piece of 1898, of the French Republic, presented to the Society by Mr. Wm. H. Pfahler.

Prof. Maxwell Sommerville exhibited a miniature Bible, and a miniature French and English dictionary in a case with a magnifying glass, reproduced by the aid of photography; also a Spanish silver coin of Ferdinand and Isabella.

Mr. John F. Lewis exhibited a Chinese charm obtained by his father about seventy years ago at Canton. It is a small rectangular piece of amber enclosing a small image of Buddha.

Mr. Culin exhibited two Chinese court fans, said to have belonged to the Chinese Empress, Emperor Hien Fung's widow, who died in 1881.

Mr. Culin also exhibited a Russian *shotü* or abacus, and a puzzle in the form of a canoe, similar in form and principle to an Hawaiian puzzle of the same name displayed at a recent meeting.

Mr. Charles D. Clark made a gift of twenty-five dollars to be expended for binding, and a special vote of thanks was passed.

OCTOBER 5TH, 1899.

The death was announced of the President of the Society, Dr. Daniel G. Brinton, on the 31st of July, in the 63d year of his age, and of Mr. Carl Edelheim, Resident Member, on the 28th of September, in the 57th year of his age.

It was voted that the Chairman, Vice-President Jordan, appoint a committee to prepare resolutions in regard to President Brinton's death; and Messrs. Horner, Lyman, and Culin were so appointed.

It was voted that addresses in commemoration of President Brinton and Mr. Edelheim be delivered at the next stated meeting of the Society, and that the Recording Secretary send out notices to that effect.

Mr. Culin said, in reference to the pitholes lined with brick near Belhaven, Beaufort County, N. C., that Mr. F. H. Cushing, to whom the brick and the photographs of the pits had been submitted, answered that in his opinion the pits were probably oven furnaces for food-curing, but that they may have been used in pottery-firing, especially in making "smudge" varieties. They may also have been used for calcining oyster shells, for use in tempering clay for pottery. The sherds collected from the surface were coarse ware, tempered with sand and pulverized quartzite, and were not, in Mr. Cushing's opinion, connected with the pits.

Mr. Culin exhibited a collection of old fans from Venice, lately received by the University Museum as a gift from Mrs. Joseph Drexel.

Mr. Culin also exhibited copies of the reproductions of the Codex Cospiano, a Mexican Codex in the library of the University of Bologna, and of the Codex Telleriano-Remensis, recently executed at the expense of the Duc de Loubat and presented by him to the Archæological Museum of the University of Pennsylvania.

Mr. Culin exhibited a copy in bronze of the medal struck by a committee of the Society in honor of its late President, Dr. Daniel Garrison Brinton. The design of the medal was approved, and the copy exhibited was handed to the Curator of Numismatics to be placed in the Society's cabinet.

NOVEMBER 3D, 1899.

The meeting was devoted to the commemoration of Dr. Brinton and Mr. Edelheim, lately deceased.

Mr. Inman Horner, the Historiographer of the Society, delivered an address on the life of our late fellow Resident Member, Mr. Carl Edelheim, with special reference to his share in the promotion of antiquarian knowledge and of the interests of our Society.

Mr. Stewart Culin spoke briefly with reference to Mr. Edelheim, and offered the following resolutions, which were unanimously voted:

"*Resolved*, The Numismatic and Antiquarian Society of Philadelphia desires to record its sense of loss in the death of its late member, Mr. Carl Edelheim. His devotion to the interests of the Society through many years, his amiable personal character, and his generous and unselfish public spirit, render his untimely death a public as well as a personal calamity.

"*Resolved*, That a copy of these resolutions be transmitted to his family, with an expression of the Society's deepest sympathy in their affliction."

Mr. Horner likewise delivered an address in commemoration of the life and work of our late President, Daniel Garrison Brinton, M. D. (see page 37).

Mr. Culin also spoke with reference to the loss the Society had suffered in the death of President Brinton, and offered the following resolution, which was unanimously voted:

"*Resolved*, That we, the Numismatic and Antiquarian Society of Philadelphia, are quite overwhelmed by the untimely death of our admired and beloved, learned and amiable President, Dr Daniel Garrison Brinton, the world-renowned Americanist, philologist, anthropologist, and philosopher. The world has indeed lost an indefatigably industrious and remarkably intelligent promoter of learning; but to our Society, for half a generation especially favored with his wise and friendly guidance and instruction, as well as with the reflected glory of his name at our head, his loss is altogether irreparable. Yet in the midst of our bitter grief, we cannot but remember, with the warmest sympathy, the deep affliction of his immediate family."

DECEMBER 7TH, 1899.

The death was announced of Dr. Walter J. Hoffman, of Washington, D. C., a Corresponding Member, November 8th, 1899; and of Hon. Amos Perry, of Providence, R. I., Hon. Vice-President of this Society, for Rhode Island, August 10th, 1899.

Mr. Charles E. Dana exhibited and described a series of casts of royal and other seals, obtained by him at Paris, similar to those exhibited by him at the meeting of November 3d, 1898. This evening's exhibit included the Fisherman's Ring Seal; the Seal of the Bulls, 1114; the Seals of Pascal II, 1114; Clement XIV, 1772; Pietro Gradenigo, Bulle d'or, 1300; Thomas, Count of Savoy, 1280; Templars, 1202; Templars, Preceptory, Provence, 1269; Templars, 1214; Templars, 1255; Hospitalers, 1356; Grand Master Teutonic, 1285; Teutonic, 1285; Canterbury, 1361 (double); Henry II, 1154-89; Freiburg, 1549; Bern, 1602; Henry IV, 1408; Isabel II, Queen of Spain, 1834; James II, Scotland, 1449; Richard II, 1389; Henry VII, 1493; William the Conqueror, 1069; Pius VII, 1817; Christian IX, Denmark, 1865; Charles I, 1625-49; Alexander I, Russia, 1815; Commonwealth, 1651 (two); Golden Seal of Henry VIII, 1527; Southampton, 1495; City of Dunwich, XIIIth Century; John, Duke of Bedford, 1423; Richard de Bretagne, Comte d'Etampes, 1427.

Mr. Culin exhibited a collection of ancient Chinese coins bought by him at the sale of the collection of Rev. Henry Kingman in New York, November 8th, 1899, and intended for the Free Museum of Science and Art of the University of Pennsylvania.

The chair appointed Messrs. W. Bailey, C. D. Clark, and C. E. Dana a committee to nominate officers and standing committees for the election for the coming year. The committee made its nominations, and, as no others were made, the whole list was by unanimous consent elected by a ballot cast by the Recording Secretary. (See page 6.)

Mr. Alfred E. Pfahler was elected a Resident Member.

Messrs. Charles D. Clark, John F. Lewis, and Charles J. Cohen were appointed a committee to audit the accounts of the Treasurer for the year 1899 and such immediately preceding years as may not yet have been audited.

It was voted that the President be requested to appoint a committee to arrange for papers and prepare a program for meetings of the Society.

A letter was read from the American Philosophical Society inviting our Society to participate in a memorial meeting in honor of our late President, Dr. Daniel G. Brinton. The President appointed Messrs. Charles E. Dana and Charles D. Clark, and the Duc de Loubat to be that committee.

1900.

JANUARY 4TH.

Mr. Cornelius Stevenson read a paper entitled: "Early Ordnance" (see page 45). A discussion followed and was joined in by Messrs. Inman Horner, Charles E. Dana, and F. D. Langenheim.

Mr. Dana said he had visited Christ Church with Dr. S. Weir Mitchell in search of the arms of George III. No trace of them was found in the vestry, but in the lumber room of the tower they discovered a fragment, the lion clinging to a small piece of the arms, and the unicorn was wholly lacking.

Mr. F. D. Langenheim exhibited three pieces of Guatemalan paper money: ½ real, 1 real, and 2 reals, issued by the city of Guatemala. The notes, he said, are the only fractional currency in circulation there at present, silver having entirely disappeared.

Mr. Culin exhibited a small sandstone tablet with figures of conventional birds in relief, probably from Ohio, lately presented to the University by Mrs. Brinton, and having belonged to her late husband.

Mr. Culin exhibited a collection of French engravings of costumes, colored by hand, lately presented to the University Museum by Prof. Maxwell Sommerville, including plates by Lenoir, Watteau, St. Aubin, Le Clère, and the series of caricatures called Le Suprème Bonton.

Mr. Culin also exhibited a collection of old Chinese coins, including "bridge money," " weight money," "Pu money," and razor- and knife-shaped coins, from the collection of Henry Kingman, sold in New York, November 8th, 1899, and bought for the University Museum.

Mr. Culin furthermore exhibited the large silver medal struck at St. Petersburg in 1800, on the completion of the Neva Bridge.

Mr. Culin reported for the committee on the Brinton memorial meeting that the General Committee had arranged that the meeting be held at the hall of the Historical Society of Pennsylvania on the evening of January 16th. He said it had been suggested that our Society present a copy of the medal struck in honor of Dr. Brinton to the American Philosophical Society, under whose auspices the meeting was to be held; and that it was intended to present a set of Dr. Brinton's works and his portrait to the American Philosophical Society on that occasion.

It was voted that Mr. Culin be appointed to present a copy of the Brinton medal to the American Philosophical Society at the Brinton memorial meeting.

The completion of the printing of the Proceedings of our Society for 1892-98 was announced, and several copies were distributed to members present.

As the President, before departing to Europe, had not appointed the committee to arrange for papers and the meeting programs, the Chairman, Vice-President Stevenson, appointed Messrs. Charles E. Dana, Charles J. Cohen, and Stewart Culin to be that committee.

FEBRUARY 1ST, 1900.

Mr. Charles E. Dana read a paper on "The Great Seal of England" (see page 49); and exhibited a collection of casts of seals in illustration.

Mr. Culin exhibited the following antiquities: An Ashantee medicine man's staff, lately presented to the University Museum by Dr. S. Weir Mitchell; two Mexican terra-cotta masks, purchased by the Museum from the estate of Dr. W. H. Dickeson, of Media, Pa. These masks are similar to a series of Mexican masks in the Poinsett collection deposited by the American Philosophical Society in the Academy of Natural Sciences of Philadelphia. Nothing is definitely known of their history, and they remain among the problems in American archæology. Mr. Culin also exhibited two large bronze Japanese coins or medals, one in the form of a sword or knife and the other in the shape of the old Chinese *Pu* coins. Nothing is definitely known of these pieces, now in the University Museum. Mr. Culin further exhibited five pieces of the coinage of El Mahdi, bearing on one side his sign manual, and on the reverse in Arabic *Duriba pî Omdurman*, and the date 1310-1312, A. H.=1890-92.

MARCH 1ST, 1900.

Dr. Wm. N. Bates, a visitor, read by invitation a paper on "The Coinage of the Ancient Greeks," and he illustrated it with Greek coins from his private collection. Special thanks were voted, and a copy of the paper requested for publication in our Proceedings (see page 73).

Mr. Dana spoke of the calendar used by the Turks of the present day in Turkey and Egypt, showing that the dates A. H. 1310-12 given at the last meeting should correspond to 1892-94. Mr. Dana exhibited some leaves from a Turkish calendar for 1311, corresponding to 1893-94; and said that for the purpose of borrowing money and paying interest thereon the Turks had adopted the Russian calendar. The sheets exhibited showed there was now a difference of about two years between their canonical and financial calendars.

Mr. Culin exhibited several ancient Chinese mirrors, saying that Dr. Max Buchner, Curator of the Royal Ethnological Museum in Munich, had called his attention to Dr. Hirth's discovery that the designs on the back of the old Chinese mirrors were not Chinese, but resembled those of classical European antiquity, consisting of hounds, bunches of grapes, etc. Mr. Culin exhibited a cast of one of these mirrors in the Munich museum; also an ancient European mirror with a similar design; also an ancient Chinese mirror, larger than the preceding, inscribed with Chinese characters; a small Chinese mirror with the twelve horary characters on the back; and a modern Japanese toilet mirror.

It was voted that a new design for the seal of the Society, submitted by Mr. Charles E. Dana, be accepted as the seal of the Society.

Mr. Charles J. Cohen reported as Chairman of the committee to audit the Treasurer's accounts that the accounts had been audited and found correct.

APRIL 5TH, 1900.

The death of Rev. Wm. H. Brooks, Corresponding Member, was announced, February 19th, 1900.

Mr. Charles E. Dana read a paper entitled: "The Origin of Heraldry," and illustrated it with colored diagrams representing the royal arms of England at different periods, as well as a series of shields showing the progressive quarterings of a shield through marriage.

Mr. Culin, in comment upon Mr. Dana's paper, said that the contemplation of European armorial bearings like those exhibited, recalled the similar heraldic designs used by savage and primitive peoples, such as the American Indians. The main difference to be noted is that, while the devices in European heraldry are referred to individuals and families, the symbols on the shields of the old Mexicans and other American tribes are cosmical and mythologic. The analogies in the symbolism are very striking, and it is not unlikely that we may ultimately find that European heraldry rests upon the same motives as those we find in the New World.

Mr. Lyman read extracts from a private letter from Mr. Edward Gilbertson, of Ilfracombe, Devonshire, England, commenting upon the last issue of the Society's Proceedings, which had been forwarded to him (see page 85).

On motion of Mr. Culin, it was ordered that a copy of the Brinton medal be presented to Mr. Gilbertson as a token of the Society's appreciation of his interest.

Mr. Dana inquired as to the use of hardened copper by the ancients as evidenced by a chisel found in Egypt, and presumably used in cutting the inscriptions.

Mr. Culin urged that the theories as to a lost art of hardening copper were largely the outcome of the supposed necessity for a hard metal implement to cut the rock inscriptions, rather than of direct evidence; and that recent investigations had shown that the ordinary stone hammer was quite sufficient for the purpose. Mr. McGuire, Professor Holmes, and others had demonstrated by actual experiment that the stone hammer was an effective tool for the purpose mentioned.

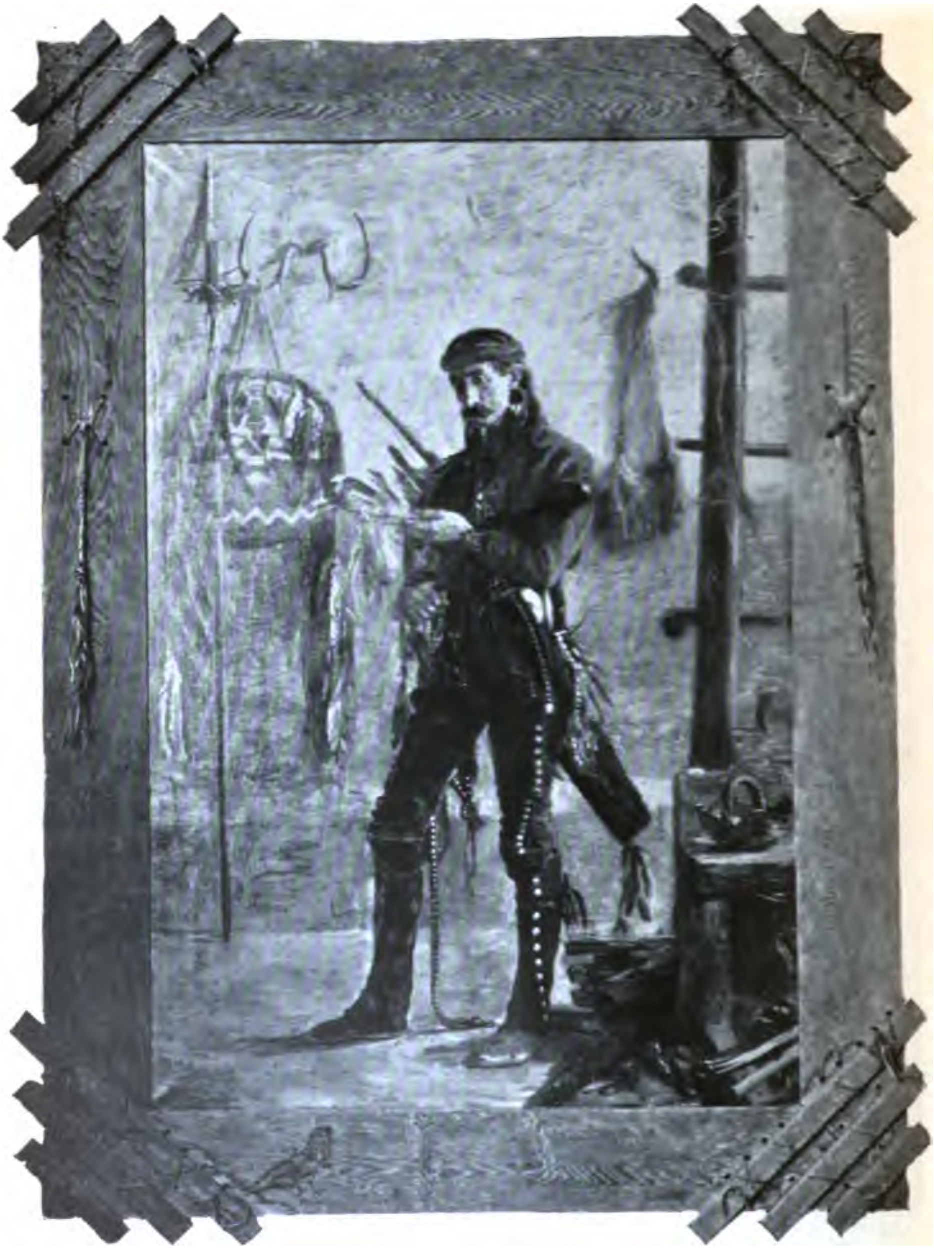
Mr. Charles E. Dana presented a copy of William Redman's *Hand-book of Information on Money, Currency, and Precious Metals*, London, 1900.

MAY 3D, 1900.

Mr. Charles J. Cohen read a paper on "A Hebrew Omer of the Year 1800," which he exhibited (see page 89).

Two letters were read from the President, Mr. John T. Morris, dated in Italy the 11th of February last and the 22d of March last, and illustrated with nineteen large photographs (see page 93).

Mr. Langenheim exhibited and presented to the Society a set of Porto Rico silver money, six coins, coined in Spain.



Frank Hamilton Cushing,

In his costume as a Priest of the Bow, in Zuñi.
From the portrait by Thomas Eakins, in the Museum of Science and Art
of the University of Pennsylvania.

OCTOBER 4TH, 1900.

The death was announced of Franklin Platt, Resident Member, July 24th, 1900, in his 56th year; Frank Hamilton Cushing, Corresponding Member, April, 1900; Dr. J. P. Six van Hillegom, Corresponding Member, July 17th, 1899, in his 75th year.

Mr. Culin spoke upon his visit during the past summer to various Indian tribes, and exhibited a number of specimens he had collected, including: a carved seal-club from the Makah at Neah Bay, Washington, and probably made by the Clahoquaht; four wooden and stone tubular pipes from the Hupa Valley Indians; a stone "war-club" and two stone tool-handles from near Eureka, Cal., and an otter skin medicine bag and a wooden plume-box, inscribed on the lid with the ritual of a secret order, from the Sioux at Devil's Lake, S. D.

Mr. F. D. Langenheim, Curator of Numismatics, presented a specimen of the new Austrian five-crown piece; and exhibited a specimen of the new Austrian gold twenty-crown piece. He also gave a list of sixteen coins which he had presented and placed in the Society's collection during the summer.

Mr Lyman read several communications from Mr. Edward Gilbertson: his letter acknowledging receipt of the Brinton medal; the method of producing the black patina on sword-guards in Japan; comments on four Turkish coins presented to the Society, and a description of his coin cabinet (see pages 103, 105, 107).

NOVEMBER 1ST, 1900.

Mr. Charles E. Dana read a paper on "Falconry" (see page 109).

The President, Mr. John T. Morris, described a custom among the Chinese at Yokohama of flying small birds on a clear day. The birds resemble a lark, and rise vertically to a height of a hundred feet, fluttering in the air. They are imported from China, and are said to bring as much as 100 yen.

Mr. Culin exhibited a collection of objects obtained by him at Neah Bay, Washington, and read a paper on his visit to the Makah Indians.

Thanks were voted to Mr. Dana and Mr. Culin for their papers.

Mr. F. D. Langenheim presented a Danish 20-cent piece and a 20-cent piece of Uruguay.

Mr. Morris presented a French 10-centime piece.

Mr. Francis Jordan, Jr., exhibited a brass plaque with an engraved effigy of a Venetian doge, which he regarded as a portrait.

Mr. C. Stevenson exhibited a Japanese sword.

The President was requested to appoint a committee to nominate officers for the coming year.

DECEMBER 6TH, 1900.

The President, Mr. John T. Morris, said that he had appointed Messrs. Westcott Bailey, Lewis, and Cohen as the committee to nominate officers for the coming year. The committee reported its nominations, and the whole list was elected without opposition (see page 7).

The Publication Committee was authorized to publish the Proceedings of the Society for the past two years, provided the expense should not infringe upon the invested funds of the Society.

President Morris exhibited a small Etruscan bronze image from Perugia.

The Recording Secretary announced the following gifts by Mr. F. D. Langenheim of coins deposited in the Society's collection at Memorial Hall:

One Heller (copper), Austria.

Ten Heller (nickel), Austria.

Prof. Maxwell Sommerville exhibited and discussed a number of Buddhistic objects from Japan, namely: a gilded brass reliquary, *sharito;* terra-cotta figures of Daruma and Fukurokujin; a colored glazed image, called familiarly *Fukusuke;* a fly-brush; a magic mirror, with a figure of Buddha embossed on the back; two bronze plaques in small, flat, lacquered china, one representing the death of Buddha, and the other Buddha in Paradise; a terra-cotta image of a man with a beard, from a grave, where it had been buried as a mortuary sacrifice, the back being inscribed in Chinese characters: "*Kwan Chô*" (Office Chief); and a "lost child's ticket," inscribed with a hare; also an enameled silver amulet with the feet of Buddha from Madras. Thanks were voted to Professor Sommerville for his paper and exhibition.

The question of procuring a new meeting place for the Society was introduced by Mr. Inman Horner; and after discussion was referred to the Hall Committee.

1901.

JANUARY 3D.

Dr. Jacob Hirsch, of Munich, a visitor, exhibited a collection of Greek, Roman, and Renaissance coins, and commented upon the specimens.

Mr. Culin exhibited a collection of thalers and medals recently acquired by the Archæological Museum of the University.

On motion, the recommendation of the Hall Committee that the next meeting of the Society be held at the rooms of the Philobiblion Club was approved.

FEBRUARY 7TH.

The Society met at the rooms of the Philobiblion Club, Juniper Street, below Walnut.

Mrs. Zelia Nuttall exhibited a fac simile of a Mexican manuscript in process of reproduction under her direction in London. It had formerly been in a library in Florence; then came into the possession of an Englishman; and was at length successfully traced to England by Mrs. Nuttall. She explained its symbolism. She also exhibited another fac simile of a Mexican manuscript in Florence, which has been reproduced under her direction, and is to be issued soon by the Peabody Museum.

Mr. Culin exhibited copies of *Das Tonalamatl der Aubin'schen Sammlung*, edited by Dr. Eduard Seler, Berlin, 1900, and of the Vatican Codex 3,738, known as the Rios Codex, reproduced by the Duc de Loubat, an Honorary Member of the Society.

Mr. Culin also exhibited a Swedish plate thaler.

MARCH 7TH.

The Society met at its hall, northwest corner of Broad and Pine Streets.

Mr. Culin read a paper by Mr. Louis L. Meeker, of Eagle's Nest Camp, in the Pine Ridge Reservation, South Dakota, on *Ogalala Games*,* illustrated by a collection of implements for the games described, collected by Mr. Meeker.

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*Published in the *Bulletin of the Free Museum of Science and Art*, Vol. III.

Mr. George McCall, a visitor introduced by Mr. Horner, exhibited five small silver images of a horse, deer, goat, cow, and lion, about four inches high, which had been brought from Peru about seventy years ago by Mr. McCall's uncle, Mr. Edward McCall, who was in business in Peru.

Mr. Horner, in behalf of Mr. William E. Littleton, presented a bronze medal struck in 1900 to commemorate the establishment of the capital in the District of Columbia.

Prof. Maxwell Sommerville exhibited a Touareg sword and a Touareg blunderbuss collected by him in his recent expedition.

The President, Mr. John T. Morris, exhibited three ivory buttons, which had been brought from China about a hundred years ago; and an old brass button-mould from New Paltz, N. Y.; also specimens of "chop dollars" from China, and one from Formosa. He presented a bronze medal of the Paris Exposition of 1900, and a vote of thanks was passed.

Mr. David Milne presented a white metal medal of Hieste Clymer.

The Treasurer, Mr. Harry Rogers, presented his annual report.

The President appointed Messrs. John F. Lewis and Charles J. Cohen a committee to audit the Treasurer's accounts.

On motion, two members were added to the Committee on the Hall, with instructions to report recommendations at the April meeting.

Dr. George A. Dorsey, Curator of Anthropology in the Field Columbian Museum, Chicago; Dr. C. F. Newcombe, of Victoria, B. C., and Mr. Edward Gilbertson, of Ilfracombe, England, were elected Corresponding Members.

APRIL 3D, 1901.

Mr. Charles E. Dana read a paper on "The Long-bow" (see page 119). A general discussion followed.

Mr. William R. Claxton presented to the Society a medal struck on the second inauguration of President McKinley.

The President, Mr. John T. Morris, exhibited and discussed a medallion about six inches in diameter, bearing a Medusa head, the whole cast in brass; obtained at Naples and presumably Roman (see page 137).

It was voted that the meetings of the Society should in future be held at the University Club.

MAY 2D, 1901.

Mr. Lyman read a paper by Mr. Edward Gilbertson, Corresponding Member, of Ilfracombe, England, on "The Coinage of the Ottoman Sultans" (see page 139).

Mr. Gilbertson presented a collection of twenty-two modern Turkish coins. A vote of thanks was passed for his paper and the coins.

The Curator of Numismatics, Mr. F. D. Langenheim, presented the ten-cent piece of Hawaii; and exhibited the proof set of the present year's United States coins, which he had purchased for the Society's cabinet.

Mr. Richard W. Davids read a paper on "Earliest Dates on Coins" (see page 145).

The President, Mr. John T. Morris, exhibited a series of Pennsylvania German plates, made by David Skinner in 1811, now in Memorial Hall.

OCTOBER 3D, 1901.

The death of Rev. Albert L. Long, D. D., of Robert College, Constantinople, a Corresponding Member of the Society, was announced.

Mr. Culin spoke on his explorations and travels in the interest of the University Museum since the May meeting. He had visited Cuba early in the season to investigate the reported existence of a tribe of savage Indians there. Landing at Santiago, he went to El Caney and Guantanamo, and thence to La Gueira, where the Indians in question were living. He found them to be of more or less pure blood, without any tribal organization, talking Spanish; and such Indian words and customs as they possessed appeared to be common to the Cubans living in the eastern part of the island.

After returning home, he visited New Orleans, to inspect the archæological collection of the late Dr. Joseph Jones, of that city, formerly Honorary Vice-President of our Society for Louisiana. The most important pieces in the collection had been published in Dr. Jones's work. While at New Orleans, Mr. Culin visited the remnant of the tribe of Choctaws living near Mardeville, across Lake Ponchartrain from the city. From them he collected parts of a dance costume, consisting of beaded belts, which he exhibited, together with a number of other objects.

Mr. Culin, after returning home again, went to New Mexico and Arizona, visited the Hopi Mesas, and made large collections by purchase of antiquities. Among other objects, he described a gilded bronze image of Christ from a crucifix, procured at Oraibi. The image had probably formed part of a processional crucifix, and was supposed to date from the period of the expulsion of the Spanish friars at the time of the Pueblo revolt in 1680. He exhibited a number of finely-finished tubular clay pipes and several stone charms and ornaments, forming part of his summer collections.

The President, Mr. John T. Morris, exhibited a Japanese bronze vase with ornaments of a fox and grapes in relief. He inquired as to the probable source and significance of the design in Japan.

Mr. Charles J. Cohen exhibited a copy of the seal used by Mary Queen of Scots; a Shakespeare stamp; a bronze gilded medal of Louis Philippe, with the Arc de l'Etoile on the reverse; and a Napoleonic medal, with the inscription: "His. de la Révolution, de l'Empire, de la Restauration et de la Mon. de 1830."

Mr. Charles D. Clark exhibited a Micmac throwing stick obtained from a Micmac Indian at Digby, Nova Scotia. It was a curved hickory rod about thirty-seven inches long, having a double cord with a running knot fastened at the upper end. He said he had, some thirty years ago, in camp in New Brunswick, seen an Indian cut a birch sapling, make a stick like this, and use it in throwing stones. Last summer, at Digby, he asked an Indian if he could make such a stick, and the present specimen was the result. Mr. Clark said the throwing stick was used for throwing stones, and that it was asserted the Indians could throw 600 yards with it. He himself had seen them throw 250 yards. The throwing stick was formerly used by the Indians in their tribal fights. At present, it is used at their festivals. The Indians were very particular about the character of the stones used.

The President, Mr. Morris, presented to the cabinet an official medal of the Buffalo Exhibition, 1901.

Mr. Charles J. Cohen presented to the cabinet a Victoria medal, 1901; five silver and three copper English coins; a silver coin of the South African Republic; and four silver and four copper French coins.

Mr. F. D. Langenheim presented to the cabinet an Italian copper coin and thirteen Mexican copper coins.

An invitation was received by the Society to appoint a member

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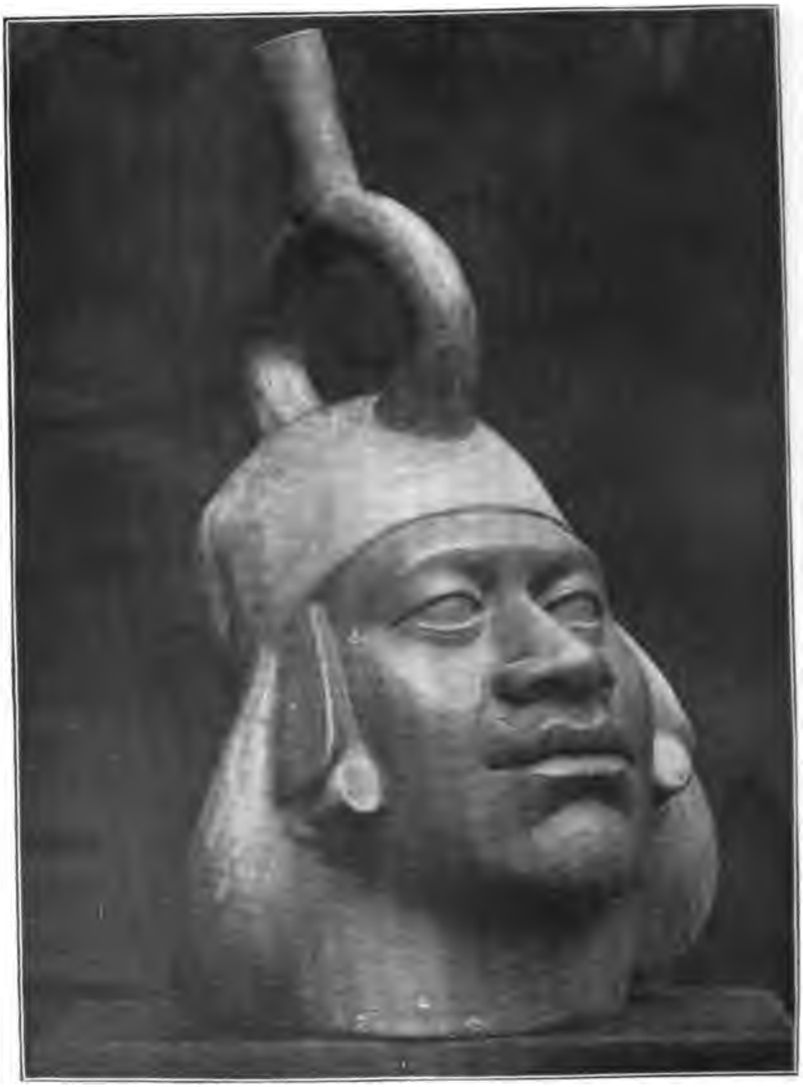

Peruvian Portrait Vase.

Collection of Mr. Coulon, Vice-President of the Conseil d'Etat, Paris.

of the General Committee for the thirteenth session of the International Congress of Americanists; and the President was by vote authorized to appoint a representative to act for the Society.

By vote, the Society agreed to subscribe to the proposed *Bulletin International de Numismatique.*

A letter was read from Mr. E. Deshayes, Conservateur-Adjoint of the Musée Guimet, Paris, inclosing a photograph of a Peruvian "portrait-vase" in the collection of Mr. Coulon, Vice-President of the French Council of State, and inquiring for any possible information as to the personage represented and the artist who has modeled the face with so much talent; suggesting also that it very likely may be some celebrated masterpiece vulgarized by the Peruvian potters. He thought such vases rather rare, knowing of only one at the Trocadéro Museum, at Paris; one in the British Museum, and some others at the Berlin Museum, these being reproduced in the great work of Dr. Seler, *Peruanische Alterthümer.* As Peruvian art has been discussed in the publications of our Society in former years, it was possible we might give some clue to an elucidation of the present interesting subject.

Mr. Culin said that such portrait-vases were not as rare in American collections as they appear to be in Europe. He suggested that the discussion of the subject be deferred to the next meeting, promising then to bring examples from the Society's own collection; and it was so agreed.

NOVEMBER 7TH, 1901.

The death was announced of Robert Noxon Toppan, a Life Member of the Society, May 10th, 1901; and of Henry W. Cramp, a Life Member of the Society, October 3d, 1901, at the age of 50 years.

Dr. Alfred C. Haddon, of Cambridge, England, a visitor, gave an interesting account of the Cambridge expedition to Torres Strait.

Mr. Culin exhibited three Peruvian portrait-vases, from the Society's collection, and discussed the inquiries and suggestions made in the letter of Mr. E. Deshayes at the last meeting. Mr. Culin said such vases were not quite so rare as might be inferred from that letter, for they are to be seen in most large American collections; for instance, the Field Columbian Museum, Chicago, the American Museum of Natural History, New York, as well as the Museum of the University of Pennsylvania. In his opinion, the vases exhibited the highest attainment of the potter's art in America, and must be regarded not as debased copies of any masterpiece, but as probably modeled from life; though it is uncertain whether special important personages are intended to be represented. Mr. Culin's opinion was discussed by the members present, but without dissent.

Mr. Inman Horner exhibited two gold medals recently presented to Dr. A. Donaldson Smith; one, the Kane medal awarded by the Geographical Society of Philadelphia, and the other, a medal awarded by the Royal Geographical Society.

Mr. Culin exhibited a Spanish silver dollar of Charles IV, with the American counterstamp: "God Save the President."

A letter was read from President Morris, appointing Mr. Culin the representative of the Society in the General Committee of the Congress of Americanists.

December 5th, 1901.

Mr. Charles E. Dana read a paper on "Some Literary and Antiquarian Frauds" (see page 149).

Mr. Culin exhibited a collection of Polish medals recently acquired by the Archæological Museum of the University of Pennsylvania.

Mr. Inman Horner read a paper by Mr. Henry C. Mercer, of Doylestown, Pa., a Resident Member of the Society, on "A Pennsylvania German Stove Plate," accompanying it with a photograph of the plate (see page 171). A discussion on the German stove and stove plates followed, participated in by many of the members.

Mr. Charles E. Dana discussed the necessity of securing a permanent hall for the Society, and, on his motion, the President was requested to appoint a committee to consider the questions of securing a permanent hall and of promoting the general interests of the Society.

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D. G. Brinton, M.D.

DANIEL GARRISON BRINTON, M. D.

AN OBITUARY ADDRESS, BY INMAN HORNER, HISTORIOGRAPHER OF THE SOCIETY.

(November 3d, 1899.)

Our late President, Daniel Garrison Brinton, was born May 13th, 1837, at the homestead of the Brinton family called "Thornbury" in Chester County, Pennsylvania, the fourth child and second son of Lewis and Ann Garrison Brinton. He was of the seventh generation in descent from William Brinton, of the Parish of Sedgeley, Staffordshire, England, born in the year 1630, and married by Friends' ceremony to Ann Bayley in 1659.

William Brinton must have been one of the earliest disciples of George Fox, and in consequence suffered severely the persecutions dealt out to the people commonly called Quakers. His goods were levied on for taxes and to pay fines, we know, in 1683. In the autumn of 1684, he with his wife and son landed in Brandywine Hundred, Delaware; and they spent a most trying winter in a sort of cave-dwelling near the present site of Wilmington. The next year, he with others journeyed up Chester Creek, and near its headwaters took up various parcels of land, as is shown by "Holmes' map of first purchases on Chester Creek." This land is still owned by his descendants, and the place "Thornbury," where Dr. D. G. Brinton was born, has never passed by deed, and is still owned and occupied by Dr. Brinton's older brother. Lewis Brinton, the Doctor's immediate ancestor, was, as his forebears had been, a successful farmer in that fertile valley, and left a very considerable fortune to his children.

From his mother, Ann Garrison, who was a daughter of Daniel Garrison, a member of Congress from Salem, N. J., and who died at the age of eighty-seven, Dr. Brinton probably derived his love of study and mental activity. Our distinguished fellow-member, the late Rev. Mr. Garrison, of Camden, Judge Garrison, of the same place, Commodore Garrison, of New York, were all relatives; while, on his father's side, General George B. McClellan, Dr. John Brinton, Brinton Coxe, late President of the Historical Society, and many other well-known residents of this state, were cousins of various degrees of affinity.

Daniel G. Brinton was educated as a boy at a private school in West Chester, Pa., and in 1854 entered Yale College, in the Freshman Class. He took an active part in all the student life of the time, was a member of the Greek-letter societies *Σ. Δ.*, *A. Σ. Φ.*, *Δ. K. E.*, and the Scroll and Key, and formed friendships which were life long. He gained several prizes for English composition, and was, in his junior year, selected as one of the editors of the *Yale Literary Magazine*. During his sophomore year, his physician advised him to spend the winter in a warmer climate, and Florida was selected. His residence there had a most important influence on his future, as will be seen later in speaking of his literary work. Brinton graduated with his class in 1858, and immediately began his studies in medicine in the office of Dr. Jacob Da Costa, attending lectures at Jefferson College. Graduating M. D. from Jefferson in the spring of 1860, he went to Heidelberg, Germany, and to Paris, further to prosecute his studies; and in 1861 he began the practice of medicine in West Chester, near his home.

The Civil War was raging, however, and in August, 1862, he entered the service of the United States as "Acting Assistant Surgeon," and was put in charge of a large hospital on Turner's Lane, Philadelphia. On February 20th, 1863, after an examination, he was given a commission as Surgeon, U. S. V., with the rank of Major, and was assigned to duty with the 11th Army Corps, then part of the Army of the Potomac. He was present at the disastrous battle of Chancellorsville the same spring. The 11th Corps took part at Gettysburg in July, with Brinton Surgeon-in-Chief and in charge of the field hospital. Dr. Brinton rarely spoke of his long military experience; but his work at Gettysburg, with thousands of wounded and its wearied surgeons, made a very deep impression on his mind. The battle was a three-days' fight, and the losses were as heavy as in any battle known to history.

He then went to the Army of the Cumberland, operating in East Tennessee, and was present at the battles of Wauhatchee, Lookout Mountain, and Missionary Ridge. During this campaign he suffered a severe sunstroke, which incapacitated him for duty in the field, and which made him something of an invalid during the hot months all his life. Dr. Brinton, Major, U. S. A., was then put in charge, April, 1864, of all the hospitals, numbering over two thousand cases, at Quincy, Ill., and continued there until the end of the war; when on August 5th, 1865, he was mustered out of service as Brevet Lieutenant-Colonel.

Such is a brief history of his military career. He rarely referred to his life in the army, and but few of his friends, and perhaps none of his literary associates, thought of him as a man who had been in many battles and of field rank. His fame as a savant obscured his services as a soldier; but he himself, I think, looked with greater pride on these, and I wish here to recall them to his friends. He always wore the modest badge of the military order of the Loyal Legion, and it was buried with him.

During his services at Quincy, the Doctor met Miss Sarah M. Tillson, the daughter of Mr. Robert Tillson, of that city, but a former resident of Boston, Mass. They were married shortly after the close of the war on September 28th, 1865. There are two children, Robert Tillson Brinton, now practicing law in Chicago, and Emilia, now the wife of Mr. James B. Thompson, of this city.

Dr. Brinton then resumed the practice of medicine, in Philadelphia. In 1867, he became the Assistant Editor of *The Medical and Surgical Reporter*, a weekly magazine, and on the death of Dr. Napheys, assumed entire charge of that periodical, gradually abandoning the practice of his profession. This connection lasted for more than twenty years. His residence was on Arch Street above Twentieth until the year 1874, when he purchased a pleasant house in a beautiful lot of an acre or two at Media, Delaware County, which was his home until his death. In the year 1890 he bought a dwelling on Chestnut Street above Twentieth, which he used as a winter home, and where he entertained his many friends.

Dr. Brinton was for some years, until its dissolution, a member of the Reform Club; and, since 1880, of the Rittenhouse Club, of this city; and was to be seen at both places in his leisure moments, and, it is hardly necessary to say, at both his companionship was highly esteemed. He was also an active member of the Athletic Club, where he spent an hour daily, practicing light gymnastics.

His summers were generally spent in travel in Europe, where he had many personal and scientific friends. When not in Europe, he passed the hot months on the New England coast, the sunstroke suffered with the Army of the Cumberland making him unusually susceptible to high temperatures. This susceptibility influenced his life in another way. He was always desirous of making original studies in Central America, whose languages and peoples he did so much to make known; but his sufferings from heat, due to his army prostration, made him dread exposure in the tropics.

I should now speak of his literary and scientific work. It began very early; we have seen that he was one of the editors of the *Yale Literary Magazine*, and that in his sophomore year, at the age of eighteen, he spent a winter in Florida. In 1859, the year after he left college, his observations there were given to the public in a volume called *The Floridian Peninsula: Its Literary History, Indian Tribes, and Antiquities.* The sub-title of the book indicates the lines of his future studies, particularly the first words. It is perhaps not too much to say that Dr. Brinton was the first man to realize that the American Indian had a *literary history;* but it can safely be said that Dr. Brinton was the first and greatest of the investigators of that literature. What he has done to bring it before the world and to preserve it for future generations is known to but few, perhaps only to students. The following is but a partial list of his works: *The Floridian Peninsula* (1859), pp. 202; *The Myths of the New World* (1868 and 1876), pp. 337; *The Religious Sentiment:* A Contribution to the Science of Religion (1876), pp. 284; *American Hero-Myths* (1882), pp. 261; *Aboriginal American Authors* (1883), pp. 63; *A Grammar of the Choctaw Language* (1870), pp. 56; *A Grammar of the Cakchiquel Language* (1884), pp. 67; *The Philosophic Grammar of American Languages* (1885), pp. 51; *General Anthropology and Ethnology* (1886), pp. 184; *General Prehistoric Archæology* (1887), pp. 116; *A Lenâpé-English Dictionary,* edited (1888), pp. 236; *Library of Aboriginal American Literature,* six volumes (1882 to 1890): I. *Chronicles of the Mayas,* pp. 279; III. *Comedy-Ballet of Gueguence*, pp. 146; V. *The Lenâpé and Their Legends,* pp. 262; VI. *Annals of the Cakchiquels,* pp. 234; VII. *Ancient Nahuatl Poetry,* pp. 176; VIII. *Sacred Chants of the Ancient Mexicans*, pp. 95; *Races and Peoples:* Lectures on Ethnography, pp. 313; *Essays of an Americanist* (1890), pp. 489; *The American Race*: The Native Tribes of America (1891), pp. 392; *Studies in South American Languages* (1892), pp. 67; *The Pursuit of Happiness* (1893), pp. 292; *The Native Calendar of Central America and Mexico* (1893), pp. 59; *Nagualism:* A Study in Native American Folk-Lore and History (1894), pp. 65; *A Primer of Mayan Hieroglyphics* (1895), pp.

152; *Report on the Columbian Historical Exposition at Madrid* (1895), pp. 70. In connection with the Rev. Horatio Hale, of Canada, Dr. Brinton, in 1882, undertook the publication of *A Library of Aboriginal American Literature.* Of the eight volumes published Brinton contributed six; they appeared at intervals from 1882 to 1890. They are translations accompanied by vocabularies of the histories, annals, or plays of various American tribes, never before published; and are not only monuments of the learning and industry of the editors, but disclose to the world a previously unknown culture.

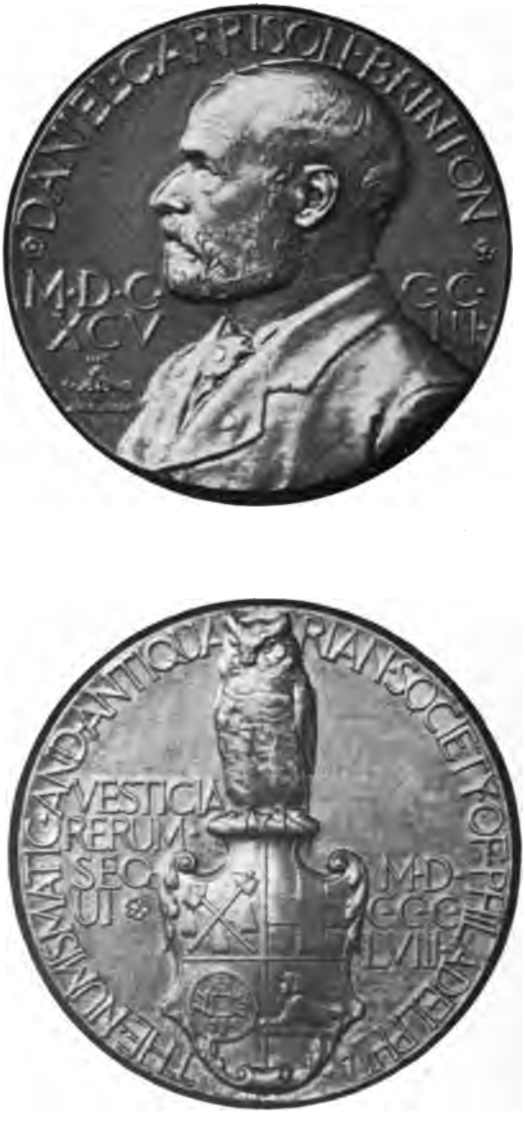
Dr. Brinton's books may be divided into three distinct classes: First and most important are his original studies in the languages of the Aboriginal tribes of this country; such as, the six volumes just referred to, *A Grammar of the Cakchiquel Language*, *A Primer of Mayan Hieroglyphics*, etc. These books are the result of most painstaking, laborious studies in languages which were new to the investigators, and involved the making of vocabularies and grammars, and, one may say, the making over of the language itself. Dr. Brinton has stated that the Indians had no common roots in their languages, that each tongue even among neighboring tribes was different in terms, grammar, and construction from the other. Only a student of linguistics can understand the labor, thought, and ingenuity shown in such work as that published by our late President. The second class into which I have divided Dr. Brinton's works is composed of the more general studies and essays growing from his work in linguistics; such as: *Aboriginal American Authors* (1883), *General Anthropology and Ethnology* (1886), *The American Race* (1891). These are the ripe fruits of his scholarship, and contain the conclusions drawn from his great learning by his active and original mind. They are intended for the general reader, but are of great weight and authority with all students of ethnology and anthropology. They have been extensively read, and are constantly quoted both at home and abroad by writers on these most interesting subjects. The third class has but two works. *The Religious Sentiment* (1876), and *The Pursuit of Happiness* (1893) are a series of apothegms and reflections upon general subjects, and serve to show the thoughts and opinions of the author in youth and many years later. Besides these formal writings, Dr. Brinton prepared, as a member of many learned societies and as professor in the University of Pennsylvania and the Academy of Natural

Sciences, a vast number of papers, addresses, and lectures, notably the *Lowell Institute Lectures*, in 1891, etc. As showing his versatility, he delivered before the Browning Society of Philadelphia a brilliant essay entitled "The Facets of Love in Browning's Poetry." He was an ardent admirer of Walt Whitman, both as a poet and man, and contributed largely to his comfort in his declining years and paid him frequent visits at his Camden home.

Naturally, Dr. Brinton was the recipient of many honors. He was elected a member of the American Philosophical Society in the year 1869. The Academy of Natural Sciences elected him Professor of Ethnology and Archæology in 1884; and the University of Pennsylvania made him Professor of American Linguistics in 1886. He had the degree of LL. D. conferred on him by Jefferson College, and of Doctor of Science by the University of Pennsylvania. In the year 1893, the American Association for the Advancement of Science selected him as their President, the highest honor to a man of learning that can be given in this country. Abroad his name was perhaps better known, and certainly as highly honored. He was considered among the foremost of Américanistes, and was made an honorary member of many learned societies and congresses.

All of us here, however, knew him best as a member of our small Society. He was elected many years ago—in 1876, during the Presidency of Mr. Price—and succeeded to that office in the year 1884. To his learning and zeal our proceedings and publications bear ample testimony. His urbanity, his accurate and complete knowledge on all subjects brought before us, and his ability as a presiding officer will live always in our recollection. It was our great good fortune to be able to show our friendship and our appreciation of our President, in part, on the fortieth anniversary of our foundation by striking a medal in his honor, a short time before his death.

I must say a few personal words before closing. Dr. Brinton was a very good-looking man, his stature of middle height, his figure robust and well shaped, his carriage erect and manly, his features small and clear cut, his eyes of uncommon brilliancy. His whole appearance gave indication of his life and pursuits, soldier, savant—man of the world as well. When he spoke, it was with clearness and decision. In his lectures and impromptu speeches, the orderly arrangement of his discourse, with a



The Brinton Medal.
Obverse and Reverse.

proper prelude, subject, and ending was a source of general admiration. I think that the prostration in the Valley of the Cumberland, in 1863, was the prime cause of his untimely death. He was always prostrated by even ordinary summer weather, and was always anxious about the condition of his heart. Otherwise he had uniform good health. In the spring of 1897 he had a severe attack of the grippe, and another late in the year 1898. A journey to the South did him but little good, and in April, 1899, a sudden and severe heart failure occurred. After that, he never left the house, and after a few months of constantly declining strength, he passed away at Atlantic City, on the thirty-first day of July last.

I have endeavored to bring before you a picture of our late President from some of his many sides, and to preserve in part an estimate of the great loss we and the world of science have sustained.

EARLY ORDNANCE.

BY CORNELIUS STEVENSON.

(Read December 7th, 1899.)

The origin of the word "cannon," as well as the date of its first appearance, has not been clearly ascertained, but has long been a subject of dispute, and probably will long remain so. It is supposed to owe its derivation to the word "canna"—a long, hollow reed.

The plain of Cressy still continues a scene of contest between opposing archæologists. The chief argument employed by those who maintain that the English used cannon at this place in 1346 is the passage in Froissart's *Chronicles* that the "English were used to carry cannon with their armies." On the other hand, not a word appears in these chronicles about guns or gunners, but the rout of the Genoese is distinctly attributed to the English archers.

John Barbour, Archdeacon of Aberdeen, tells us in his poem of *The Bruce* that Edward III had artillery in his first campaign against the Scotch, 1327; but, as Barbour was but seven years of age at this time, he must have been merely recording a tradition which had obtained currency many years after the event, and it is highly unlikely that the troops of Edward should have had cannon in their armament at this early date.

It would seem that powder and cannon were employed for the defence and siege of fortresses at a much earlier date than they were used in the field; for John Hewett (in his work on *Ancient Armour and Weapons in Europe*) speaks of a document of the year 1338, deposited in the Cabinet des Titres of the Imperial Library of Paris, in which cannon is mentioned as having been used in the attack on Southampton. At the siege of Calais, in 1347, Froissart tells us, the English built a strong castle of wood, to cut off the communication between the town and sea, and provided many "springards, bombards, and cross-bows *à tours* and other instruments."

The period at which cannon was used in the field is also doubtful, if we accept the statement made above as correct, that the

English employed them at the battle of Cressy; but in 1382 we obtain more reliable information, for Froissart (Vol II, pages 203 and 205) says the men of Ghent marching to the attack of their adversaries of Bruges charged about 200 wagons (chars) of cannon and artillery. They took their post on a hill, suffered their adversaries' troops to begin the attack, manœuvred to get the advantage of the sun, and plied the Brugeois with their guns; and again he speaks of Philip van Arteveld as directing his men, assembled on the mont d'or, when the attack should begin, to ply their bombards, cannon, and cross-bows in order to intimidate the enemy; and he further tells us these cannon and bombards cast forth large feathered arrows.

According to Francis Grose, the first cannon invented resembled mortars, and were generally constructed of iron bars soldered or welded together and strengthened with iron hoops; others were made of plates of iron rolled up and fortified with hoops of the same metal. Several of the first kind are said to be preserved at the Arsenal at Woolwich. Cannon were sometimes called bombards (from the Greek word *bombos*, indicating the noise they made in firing), and were principally made of hammered iron; but, in the process of time, were cast in bell or gun metal. They were also made of plates of iron or copper with lead run between them. In the latter part of the last century, one of this sort of guns was found on the coast of Ireland by a fisherman, and is supposed to have belonged to the Spanish Armada. Grose also tells us, the ancient bombards were frequently very large, and chiefly discharged stone balls of enormous size. When Mahomet II besieged Constantinople, in 1453, he battered the walls with stone bullets; and his pieces were some of them said to be of the calibre of 1,200 pounds, but they could not be fired more than four times a day.

Froissart describes a very extraordinary bombard used at the siege of Oudenarde:—"Therefore," he says, "to terrify the garrison of Oudenarde, he caused to be made a marvelous great bombard, which was 50 feet long, and three great heavy stones of a wonderful bigness. When this bombard was discharged, it might be heard five leagues by day and ten by night, making so great a noise in going off that it seemed as if all the devils in hell were abroad."

According to Grose, the petard is a machine used to burst open gates and doors of fortresses and castles. It is a sort of iron mortar, in the form of a truncated cone or bell, with a touchhole in the centre of the breech, and four handles, to fasten it to a strong plank about eighteen inches square, called a madrier, strengthened on the opposite side with a cross band of iron and a strong hook. The petard was fastened to this by staples passing through the handles. Describing the manner of loading it, he says it was to be filled nearly full with gunpowder, and then covered with wadding, and afterwards by a wooden trencher exactly fitted to its calibre. After this, it was to be driven with seven or eight strokes of a wooden mallet, care being taken not to break the grains of powder. The remainder of the petard was filled with yellow wax or pitch, and covered over with a waxed cloth. The mouth of the machine was then placed in a cavity turned to receive it in the madrier. When it was to be used, it was made fast by its hook to the gate to be broken, and fire set to the fuse through its vent or touchhole, into the centre of the powder. The effect was generally a fracture in the gate equal to the madrier. The petard was invented, according to Père Daniel, in France, about the year 1579, at which time it was used by Henry IV of France, then King of Navarre. During the latter period of the sixteenth century, floating mines, called "infernals," were used in naval warfare. They are said to have been invented by an Italian engineer, named Frederick Jambelli. They were used at the siege of Antwerp by the Spaniards, under Alexander, Prince of Parma, in the year 1585. Grose describes the bottom of the vessel, which contains three decks, as being filled with sand; the lower deck with several thousand pounds of powder, which was covered with masonry a foot thick; the second deck was furnished with a large quantity of bombs, having two feet of masonry over it; and the third deck was furnished with a number of barrels hooped with iron, filled full of all sorts of fireworks. A tube was inserted in the lower deck for conducting the fire to the powder and to the priming. This machine never worked satisfactorily and was soon abandoned as useless. There were various other kinds of cannon, both large and small, during the early age of gunpowder, such as cannon, perriers, port-pieces, stock-fowlers, sling-pieces, portingale bases and murtherers, but I have never met with any detailed account of them.

THE GREAT SEAL OF ENGLAND.

BY CHARLES E. DANA.

(Read February 1st, 1900.)

The matrices of the Great Seal of England somewhat resemble a silver pair of waffle irons. They are made of silver and weigh about 185 ounces, measuring about six and one-half inches in diameter by one and one-quarter inches in depth. They are formed of two broad, flat parts, plain and smooth on the outside, most elaborately engraved on the inside. The two disks are hinged together. There is an officer of the Lord Chancellor's Department, called "the Clerk of the Chafe Wax," whose duty it is to soften the wax needed for the seal over a charcoal fire in a chafing brazier.

The Great Seal is attached to charters of towns and institutions, treaties with foreign powers, patents of nobility, credentials of ambassadors to foreign powers, appointments of colonial governors, congés d'élire, etc., any documents to which the sovereign in Her Majesty's character as sovereign, gives her royal assent. Such deeds, called "letters patent" or "letters ouvert," acquire all their legal force and power from the Great Seal attached to them. The wax seal is fastened by cords, so woven through holes, specially made for it in the parchment, that either the wax, cord, or parchment must be mutiliated to separate them. To provide room for the cords to pass through the matrices the metal is cut away slightly at the top and bottom of each of the silver sides. To insure the impression being correctly made upon the wax two guides on the lower disk are arranged so as to fit into corresponding slots in the upper one.

In early times the seal was protected by a wreath of rushes, plaited strips of parchment, or by a box made of wood, or of "cuir bouilli"; these latter, usually richly decorated, are to-day much sought after by connoisseurs, and fetch correspondingly high prices. Till the twelfth century, pure bee's-wax was used; after that date the seals were colored green or red. Within the last 150 years, resin and other substances have been introduced, as the consumption of wax was so great. This has given a certain brittleness to the seals of modern times that was fortunately wanting in those of 500, 600, and 700 years past. Still further to economize wax, some twenty years ago, Parliament passed an act providing for a small seal to be used with a wafer, called the "Small Great Seal." This is used on congés d'élire and for other matters. Since 1818, the Great Seal has been of silver. Previous to that time, it was usually of copper, though there was one made of gold. One of the first acts of a new sovereign is to summon the Privy Council for the purpose of having a Great Seal provided. Designs are invited, and the accepted one is immediately placed in the hands of the royal engraver. When the new seal is finished, Her Majesty lays her hands upon it in Council, and it then becomes the Great Seal. The old one then undergoes a process known as "damasking." It is supposed to be destroyed, but in reality is not. The new sovereign, in presence of the Privy Council, gives it a gentle blow or two with a pointed hammer. Having been thus deprived of all its power as the symbol of royalty, it becomes the perquisite of the Lord Chancellor. The value of the metal is from £25 to £30, not counting the engraving, of course. The Lord Chancellor has another perquisite in addition to the silver seal already mentioned and his salary of £10,000 a year; it is the bag or satchel in which the Great Seal is erroneously supposed to be carried. This bag is lined with silk and gorgeously embroidered with the royal arms, and is as fine an example of art needlework as one is apt to see. The purse is renewed every session of Parliament. Lord Thurlow, in those stormy days between 1778, when he was made Lord Chancellor, and 1792 when he was deprived of that office, received so many satchels that Lady Thurlow was able to make, it is said, several magnificent counterpanes, as well as bed-hangings from out of these rare works of art.

Formerly the Lord Keeper of the Great Seal was an ecclesiastic. On his receiving office, the seal was hung about the neck of the lucky official, with the injunction to "use it to the honor of God and his sovereign"; upon which he immediately sallied forth and energetically used it for his own benefit; since no document "passed the Great Seal" until a big fee was paid the Lord Keeper. By act of Elizabeth, the offices of Lord Keeper and Lord Chancellor were united. When the Lord Chancellor enters the House of Lords, he is accompanied by his purse-bearer, who is clad in full court costume. The purse is supposed to contain the Great Seal; as a matter of fact, it never does. The Great Seal is far too precious and lies hidden away in the safest possible place, carefully closed in a morocco case, and is only removed when some most important document requires the "imprimatur" of the sovereign. The empty purse is placed behind the Lord Chancellor, and indicates that he is in possession of the Great Seal, and so entitled to perform the duties of Speaker of the House of Lords. The little ceremony is one of the many picturesque fictions of parliamentary procedure.

The ceremony of delivering the Great Seal to the Lord Chancellor is not particularly impressive, but is of great importance. The appointee is called into the presence of the sovereign. On a table near Her Majesty he will see the morocco-covered box. To this Her Majesty will point, intimating by this wave of the hand that he is to take charge of the box and its contents. After kissing the hand of the sovereign, the much honored lawyer will retire from the royal presence, bearing away with him, in the box, of course, the Great Seal of England; the possession of which under such circumstances will have constituted him Lord High Chancellor of England, with all the responsibilities, dignities, and emoluments appertaining to the office.

The Great Seal must under no circumstances ever be removed from the kingdom. The sovereign himself may leave, and no one will miss him; but the Lord Chancellor can never go abroad, as his precious charge must be always in his personal possession. The haughty Cardinal Wolsey, who was law unto himself, took the Great Seal of Henry VIII with him, when he, in 1521, went to the Low Countries. But this act was never forgiven, and was one of the causes of his downfall. In Richard I's case, the Lord Keeper, with the Seal, accompanied the King; but at that early date such rules were but loosely kept, even when they were recognized. Another case will be noted further on, that of Charles II; but his seal was of foreign manufacture, and as state documents had to be sealed in England, it was not of great use.

The earliest impression of any seal used by a sovereign in Great Britain, is that of Offa, King of Mercia. It is attached to a charter confirming a grant of land in Sussex to the Abbey of St. Denis, in the year 790. The seal is about one and one-quarter inches in height by one and one-eighth inches in width. It bears the portrait of the king, in profile, the neck bare and the head slightly stooping. The hair is bound by a narrow fillet and some leaves of laurel or olive. The word "REX" is legible in front of the profile, and doubtless the word Offa was behind it. This sovereign did much to consolidate the heptarchy into a monarchy. He was the friend of the learned monk Alcuin, and of Charlemagne, neither of whom seems to have been struck by the manner that their friend succeeded to the throne, by the simple method of murdering the rightful monarch, Ethelbald, King of East Anglia. But in those days men did not trouble themselves with such little niceties as the difference between the right conferred by the royal blood flowing *on* your body or *in* your body. Mr. Allan Wyon, the chief engraver of Her Majesty's seals, and a well-known writer on the subject, from whom I am borrowing most extensively, sees in this not quite obliterated head the following: "And as we look at this contemporary portrait of him, we may remember the description given of him by his biographer, writing at the same time, who said that Offa was elegant in body, eloquent in discourse, and with a penetrating eye."

EDWARD THE CONFESSOR (1042—*d.* 1066).—This is the first seal that is made pendant to the charters to which it was affixed, and consequently has two sides. It is three inches in diameter, and, unlike all subsequent seals, the King is on *both sides* represented enthroned. The inscription also is the same on both sides; "Edwardii Anglorum Basilei." The Saxons were very fond of such Latinized Greek words.

WILLIAM THE CONQUEROR (1066—*d.* 1087.—Here the king is enthroned on the obverse, and on horseback on the reverse. Horse and king are of a most woodeny nature. It should be noticed that the title of ruler of Normandy, "Patron," in this case, precedes that of "King of England," showing clearly which of the two he considered the more important.

Mr. Wyon thinks he sees in this figure, with legs spread apart, a clear indication of an "aldermanic habit of body, which the doctors describe as an *abdomen pendulum*. That William the Conqueror had this peculiarity we know from history. For we there read of the severe inconveniences which he again and again suffered from it. On one occasion when he had promised to visit his suzerain, Philip, King of France (1059—*d.* 1108), the Norman duke was prevented by an attack of illness in this region of his body. Philip, on learning the cause of William's illness, laughed, and expressed a hope that the Duke of Normandy might make a good recovery, and said that after such a lying-in, the cathedral of Notre Dame itself would hardly hold all the candles that should be lighted upon the churching of such an important personage. The jest was repeated to William, who flew into a great rage, and swore by the most frightful oath that, when well enough, he would enter the territories of Philip, and cause there fires to be lighted which would make a greater illumination than if the whole of Notre Dame were lit with candles; and, added the Norman King of England, "these illuminations shall not be at my expense."

Shortly after, when William was better, he put himself at the head of his army, and entered France. One of the first towns which William seized was Mantes, to which his soldiers set fire, burning even the church, in which lived two holy anchorites, who refused to leave the sacred building. Their position was made known to William, who ordered that the fire was not to be abated one jot for them, and so they and all the town perished in the flames. The day after, the Conqueror rode in savage delight over the blackened ruins,—but, as he went, his horse put its foot into a mass of hot cinders, which caused it to start aside suddenly; this threw William against the pommel of his saddle, and so severe was the injury inflicted, that the king was borne back to Rouen and died there, after most agonized sufferings. He died deserted by well-nigh all his knights and attendants, who rushed off in haste when they saw his death was near. Even his burial was unseemly. When his corpse was borne to the abbey at Caen, an abbey he had founded, a certain knight withstood the funeral procession, crying that the ground where the abbey stood had been forcibly taken from him by the king. Nor would he depart till the estimated value of the land had been paid over to him;—and even worse followed.

HENRY II (1154—*d.* 1189).—The first of the so-called "Plantagenets"; though, singularly enough, the first time the name appears in authentic English history is in the pedigree sent to Parliament by Richard, Duke of York, in 1460, where his own name is given as "Richard Plantaginet." Henry's seal is most interesting for what it does not contain, not for the stiff, archaic figure that it does. It is the last seal that is without *heraldic* ornamentation. Henry holds his shield in a perfectly natural position, showing the inside only, leaving one to infer that there was nothing particularly interesting to show on the outside. Richard, it will be seen, does quite differently.

Nothing, to me seems more touching than the passing of this great king. Beaten by those ungrateful sons of his, Richard and John, he took refuge in Chinon Castle, where Jeanne d'Arc met her ungrateful sovereign; these rebels of his own blood forced him to sign an humiliating peace. The Chancellor was reading to the old monarch a list of the rebels; "Sire," said he, "may Jesus Christ help me, the first name written here is that of Count John, your son." Then Henry turned his face to the wall; "Now," said he, "let things go as they will—I care no more for myself nor for this world." At last he was borne out to die before the altar of the castle chapel, and he passed away, sullenly muttering, "Shame, shame, on a conquered king." His servants stripped his body and the old king lay naked on the ground. In the Abbey Church at Fontevrault, where he now rests, they laid him out in state. Thither came his unworthy son Richard, and the body streamed with blood as he knelt beside it. (*Old Touraine.*)

HENRY THE YOUNGER.—This was the eldest son of Henry II. His father had him crowned in great state at Westminster, July 15th, 1170. A great seal was prepared for him, showing that he exercised true regal authority. The sole difference in this seal is that the words "Dei Gratia" are omitted, the only case of such an omission in the long list of royal seals.

RICHARD I.—This seal is so interesting from an heraldic point of view that I give the description of it in full. "First Seal, 1189. Obverse: King enthroned: closely fitting tunic, loose surcoat with embroidered edges at neck and arms, and cloak. Open crown with three points fleury. In the right hand a sword held erect; in left hand an orb topped by a cross fleur de lisée. Throne of elaborate paneled work, of four stages of arcading with intervening head moldings, the back splayed away, and the foot-board enriched with carvings of quatrefoils, and a corbel on seven arches. In the field on either side of the king's head, a crescent enclosing an estoile of seven points wavy. On either side of the throne a sprig of genista, or broom." RICARDUS DEI GRACIA REX ANGLORUM. Reverse: King on horseback, facing right. Hauberk and surcoat of mail armor, conical helmet, with, of course, no attempt at a crest. Large broad-sword, bowed shield on which is a lion contourné, or looking to the *heraldic* left as he ought not to do. Now this shield is held directly in front of Richard so that it displays half of the face, it is evident, therefore, that he has something to show and is proud of showing it. It has been conjectured that the complete shield device would consist of two lions combatant.

Second Seal.—This dates from about 1198. It is three and two-thirds inches in diameter, a trifle smaller than the first. This seal is interesting, apart from its heraldic significance. The previous seal had been in use some eight years; this the Lion-hearted King (though why he is so called, no one seems to know) took with him when he went crusading. He also took the Vice-Chancellor Malchien to carry the seal. Malchien wore his charge in the most approved manner, suspended by a cord about his neck. Off the Island of Cyprus, the Mediterranean was tumultuous, and overboard went Malchien, seal and all. It is needless to say that the seal answered admirably the purpose that a stone does in drowning a cat, so that Malchien's brief appearance on this world's stage came to an end, and Richard was sealless. This did not much affect that chronically hard-up monarch, for, when he got back to England he had a new seal made, and in order to pay for it, he required all charters, etc., granted under the old seal to be confirmed under the new, "whereby," says Speed, "he drew a great mass of money to his treasury." The full description, as given in the catalogue of the British Museum, is: "Differs from the first seal in arrangement of drapery; in shape of throne, of which each of the sides ends in a fleur-de-lis; and in the absence of the planta genista; while the crescents are replaced by a single crescent on the king's right hand, and a sun of sixteen rays on the left. The legend is as before. That on the reverse is the same as on the first seal, RICARDUS DVX NORMANNORVM ET AQVITANORVM ET COMES ANDEGAVORVM." It also differs from the first seal in the more spirited action of the horse and in the flat helmet on the king's head; and it bears on the shield three lions passant guardant in pale, the earliest appearance of the Royal Arms of England. So much for the dry-as-dust catalogue. The change of helmets between the two seals has made some wise ones insist that Richard was the first to wear that most uncomfortable of head gear, the *heaume*. On the top appears a rather complicated design that I have given much study to, and am quite convinced represents the royal lion of England standing in crest, under a sort of arch of feathers. Why the British Museum refuses to see this most interesting dawn of English royal heraldry I am at a loss to understand. Were the crest itself much less apparent than it is, the logic of the situation forced some such device on the wearer of such a hat. Fancy, if all the officers in an army, in a time when officers really did lead their troops, should suddenly agree to wear huge iron things like kegs, over their heads, so that they all looked equally absurd, and could not be told apart (anything in the way of a door plate being out of the question from the inability of every one to read), what more natural than that they should take to signs; and certainly the zoological garden would first recommend itself to their war-like, not to say, animal-like natures.

EDWARD III (1327—*d.* 1377).—This seal is probably the first that was used by more than one sovereign, some slight alteration being made by each successive king. The seal was originally made for Edward I; but then it was without the castles and fleur-de-lis. Edward II used the same seal, but added two castles, doubtless in allusion to his mother, Queen Eleanor, daughter of King Ferdinand of Castile, the arms of Castile being a castle; "punning arms," as we call them in heraldry. Edward III added the two fleur-de-lis of France above the castles. This was no doubt in allusion to his mother, Queen Isabella, daughter of Philip IV of France. The "Handsome," Philip was called; the Bad, he should have been called; for he it was, who, with his tool, Clement V, Pope of Rome, perpetrated that hideous crime on the great Order of the Temple, "the crime of the Middle Ages." Edward III had, in all, eight great seals. The most famous is the seal of Brétigny. On all previous ones he had used the title "King of France." At the treaty of Brétigny he renounced that right and left the pretended title off his next seal. He did not, however, abandon the quarterings of France, and they continued to appear. It is almost needless to draw attention to the very marked artistic advance in the execution of this seal. This seal, with altered legends, continued to be one of the great seals of England for 111 years. In 1372, Edward III had the legend altered and again took to calling himself "King of France." English sovereigns continued this harmless pleasantry until 1801. In 1377 Richard II, on his accession, had the letters EDW, in EDWARDUS, changed to RIC, thus forming RICARDUS. This, however, cannot be taken as the full measure of difference between Richard and his grandfather. 1399, enter Bolingbroke and the House of Lancaster, in the person of HENRY IV. Henry having rid himself very effectually of Richard, took his seal and, having changed the name, used it for nine years.

Mr. Wyon gives a very long and interesting description of Henry's own seal that dates from 1408. "The significance of this seal is full of interest. Henry had taken up arms against Richard II, and really won the crown by force. He had also, been called to the throne by election by Parliament; yet he preferred to defend his right to the throne on the ground of descent from Henry III, through Edmund Crouchback, the younger, who, he maintained, was the elder son of Henry III. On the deposition of Richard II, Henry formally stated his claim in Parliament, 'as being the ryght blood coming of the King' (Henry III). Henry IV was, however, always regarded by a large party in the kingdom as a usurper, and to the end of his reign he had to contend against their conspiracies. These conspiracies, in which many of the great nobles and ecclesiastics took part, were in fact the first mutterings of that storm which, although restrained by the arts and policies of Henry IV, and during the life of his heroic son, Henry V, by the commanding greatness of his character, broke out afterwards with devastating fury in the Wars of the Roses under Henry VI. And so with the anxiety natural to a usurper to invoke all the sanctions that might give sacredness to his claim in the eyes of the people, he had this seal engraved; thereby indirectly appealing at once to the popular affection for the memory of the Anglo-Saxon kings, to the reverence for the Blessed Virgin and Saints, which would enlist the sympathy of the great ecclesiastical party, and to the attachment to hereditary right so characteristic of the English people, on which, justly or unjustly, he chose to defend this claim to the throne."

"In all perfect impressions of the seal the head of the king is strikingly like that of the recumbent statue over his tomb in Canterbury Cathedral. In the canopy over the king's head are half-length figures, the Virgin with the Holy Child being in the centre; on her right is a king, crowned, holding a sceptre; on her left is a martyr holding a palm. In the tabernacle-work lower down are St. Michael the Archangel and St. George, each trampling on a dragon. In lower niches are St. Edward, King and Confessor, and St. Edmund, King and Martyr. In the upper part of the adjoining space on either side is an angel holding a shield; that on the king's right is charged with the arms of Edward the Confessor, that on the left with those of Edmund the Martyr. Below the angels, on each side is a canopied niche, in each of which is a man-at-arms holding a banner,—one that of France and England quarterly, the other of England alone. In the outermost vertical spaces, on either side, are the emblems of the four evangelists." "The base of the throne is divided into three panels, each bearing a shield charged respectively with the arms of Wales, the dukedom of Cornwall, and the earldom of Chester. These three baronies had first been united in the person of Edward the Black Prince, the father of Henry's unlucky predecessor. They were subject to the curious condition that when a Prince of Wales became king they merged into the crown and had to be created afresh on the birth of a new Prince of Wales. On the death of Edward the Black Prince, these did not devolve upon Richard II, but merged into the crown, and although Richard II had by a fresh creation been made Prince of Wales, Duke of Cornwall, and Earl of Chester, it was with the same limitations. On his deposition these baronies as usual merged into the crown; and here we may again trace the over-anxiety of the usurper to assert his claim not only to the crown, but to all the 'appurtenances' thereof."

Mr. Wyon discovers emblematic meanings in all these various persons, meanings that possibly may have been thought of by Henry. "St. Michael is angelic power triumphant over the powers of darkness. St. George the military prowess of England triumphant over oppression and wrong. The royal saints, Edward and Edmund, served to remind the beholder of Henry's claim of descent from Henry III," etc.

HENRY VIII.—This is the second seal of Henry and was used for the golden *bulla* attached to the ill-kept treaty with Francis I of France, concocted at the celebrated Field of the Cloth of Gold, in 1520. The original is in the Public Records Office in London. Up to this reign the Gothic character of the seals had been maintained; that is, for about 300 years. Now, for better or for worse, it has been left behind, and we are face to face with a new style of art and a new order of things. The throne is distinctly renaissance. The columns are over decorated and the canopy is a flattened arch with a pediment above. Flowers and other ornaments crowd every available place, but the whole effect is very rich and royal. The features of the king are lifelike, and the colossal cross upon the orb suggests the patient piety that marked his noble character (?). The legend contains nothing remarkable save the "Fidei Defensor," which appears here for the first time and has since then remained a part of the royal style. It, and much more so what follows, is, also, a reminder of the Reformation and the many storms, ecclesiastical and political, that then began to rage, and on account of which Sir Thomas More, Cardinal Fisher, and many another suffered death. On the next seal, 1542, appear the words "In terra ecclesiæ Anglicanæ et Hiberniæ supremum caput," dire words for those who declined to accept them. On this seal one sees for the first time a numeral Henricus Octavius, placed after the king's name. A rather crowded figure "8" appears in the same place on the first seal; it was very common at that time to put the royal number in Arabic numerals. "Rex Hiberniæ" takes the place in future of "Dominus Hiberniæ." The counter-seal, with the collar of the Garter surrounding the royal arms, is very rich and decorative.

PHILIP AND MARY (1553—*d.* 1558).—In this seal both sovereigns are represented, and Mr. Wyon points out the ominous position of the arms of England and France; Castile, Leon, Arragon, Sicily, Grenada, Austria, Burgundy, Brabant, Flanders, and Tyrol all taking precedence over them.

ELIZABETH (1558—*d.* 1603).—The obverse of this unusually large seal is covered with a most confused composition, but one that is rather interesting as a study of costume. The figure is stiff, and were it not for the throne that is suggested by the two ornamental knobs, and the slight bulging out of the skirt at the knees, intended to indicate a sitting posture, one would imagine that the queen was standing upright. Hands emerging from the clouds on either side hold the royal robes back. The rest of the field of the seal is a confused riot of ornament. On the reverse the queen is seen ambling along upon her palfrey. She is seated upon the old-fashioned chair-like side-saddle, that had become common a century before, the feet resting upon a little shelf called "la planchette." The modern form of side-saddle is said to have been first used by a contemporary of Queen Bess, the terrible Catherine de Médicis. The most interesting point in this seal is the appearance for the first time of that much discussed emblem, the harp of Ireland. The harp is said to have been first used as the arms of Ireland in the reign of Henry

VIII, that king substituting it for the three crowns of de Vere, formerly borne. The Earl of Northampton, then Deputy Earl Marshal, observed that he had no affection for the change; that for the adoption of the harp the best reason he could assign was, that "it resembled Ireland in being such an instrument that required more cost to keep it in tune than it was worth." In front of the harp is the fleur-de-lis and over the horse's head is the Tudor rose; each is ensigned with the royal crown. There are clouds above the queen from which stream rays of light upon her sacred head. The legend is the same on both sides, "Elizabetha Dei Gratia Angliæ, Franciæ et Hiberniæ Regina, Fidei Defensor."

With the advent of the STUART, in 1603, in the person of the canny James, several important changes were made in the seal. I have no example of the seal of James, so shall have to take up that of his son Charles I. Here one is instantly struck with the decidedly modern character of the seal. Above the king's head are the royal Stuart arms, in which, for the first time, Scotland is represented. On either side of the king are the lion and the unicorn, the former carrying the flag of St. George, the latter that of St. Andrew. The portrait is not bad, though the seal has been slightly pressed out of shape, to the detriment of poor Charles's nose and knees. In 1642 Charles moved his court to York. Shortly after his arrival, to his great joy, Littleton, the Lord Keeper, arrived with the Great Seal. The Parliamentary party were dismayed; for there was hardly a man on either side who was not fully convinced that he was fighting for constitutional monarchy, and the policy of the Round Heads was to carry on the government in the king's name; but without the Great Seal they were powerless. It is almost impossible for an outsider to realize the strange, wizard-like charm that seems to dwell in this Great Seal of England. One would think that it really was invested with the royal power, of which it is but the emblem. Hallam, in his *Constitutional History*, says: "It must surely excite a smile that men who had raised armies and fought battles against the king, should be perplexed how to get over so technical a difficulty. But the Great Seal of England, in the eyes of English lawyers, has a sort of mysterious efficacy, and passes for the depository of royal authority in a higher degree than the person of the king."

The first step the Parliamentary party took was: early in 1643 they passed an act making void all patents under the Great Seal since it had "ceased," as the act has it, "to attend Parliament." In May they brought up the question of providing a new seal. This, however, was a ticklish business; for a statute of Edward III made it high treason, with the penalty of death, to attempt to counterfeit the Great Seal. The Commons had an unpleasant feeling that the king might possibly come to his own again, and such a coming might be followed with a nasty chopping off of heads, or long imprisonments in the Tower, with those disagreeable confiscations all were familiar with, if they trifled with that sacred seal. But there was nothing else for it; so, at it they went, and after a hard tussle, by a close vote of eighty-six to seventy-four, they agreed to make a new seal. Here the Lords stepped in and tried to block the work by refusing to concur. The king, who was now at Oxford, backed them up by issuing a proclamation, dated June, 1643, stating that he would enforce the act of Edward III with the greatest rigor. The Commons were not one whit intimidated; they refused to wait for their lordships, and ordered one Thomas Simonds, an eminent medalist, oft called "Simon," for short, to make a Great Seal, and agreed that "he shall have £100 for his pains—£40 in hand and three-score pounds as soon as he shall have finished his work." This was finished in a month, but the workmanship was crude enough.

This new seal was an exact copy of the old royal seal, the one the king had with him. The Lords held out a little longer, but in October, seeing that it was of no use, they gave in. At the capitulation of Oxford in 1646, Lord Keeper Lane, to whom the Great Seal had been confided by Charles, when he, disguised, rode away from the city, surrendered his coveted charge to the Parliamentarians. General Fairfax, the commander of the victorious troops, forwarded it to the Commons, and great indeed was their joy at the recovery of the emblem of all power.

A new design was now sought for in the Great Seal. Something to fit the new order of things. No longer do we look upon a king riding along in regal attire, for no king now reigned in that realm of England. The Commonwealth has taken the place of the ancient monarchy, and, for lack of other emblem, a map of England, Ireland, and Wales appears on the seal. The lions of our departed friend, Richard of the Lion Heart, disappear from the escutcheon of England, and are replaced by the cross of St. George. The harp of Ireland is seen on another shield, and near them looms up the British fleet, that fleet which under the command of Blake, of Monk, of Penn, made the name of England famous for valor and victory throughout Europe. The names of the places marked on this map are of much interest. Vertue, who appears to have had, in 1753, a very clear impression of this seal, has left a copper-plate engraving of it, from which it seems that it had 550 names engraved on it. The design of this seal is certainly poor; though there is something rather fine in the suggestion of the sister isles protected by that invincible "Channel Squadron." Then, too, the cutting was done with great clearness and artistic ability, the blank spaces are filled up with coats of arms, a compass-dial, a dolphin, etc.; while the outer band bears a series of small oval shields charged with the cross of St. George and the harp of Ireland. The legend is, "The Great Seale of England 1651."

On the counter-seal, really the obverse, instead of the monarch enthroned, we have the House of Commons in session, the speaker in the chair, a member addressing the House, the mace on the table, while two clerks sit behind it. The execution is admirable, more than a hundred heads of members are shown, each one of which is carefully and thoughtfully executed. A large window of six panels occupies the back, and the walls are decorated with spiral columns, between which are panels of fruit and flowers. The member standing in front, without his hat, is supposed to be Sir James Harrington; and he who addresses the House is said to be Cromwell's brother-in-law, Harrison. The legend runs: "In.the.third.Yeare.of.Freedome.by.God's.Blessing.1651." The outer band is the same as on the reverse. Our old friend Simonds received £200 for this seal.

On August 11th, 1646, a curious ceremony was enacted. It was resolved that the just recovered old seal of England should be defaced and rendered harmless; so, on that date, Mr. Speaker Lenthal appeared at the Bar of the House of Lords followed by the Commons, and bearing the doomed Great Seal. A neighboring blacksmith, a brawny fellow, was sent for, who with a few powerful blows dashed the royal seal to pieces, while the delighted onlookers cheered vociferously.

The seal which the Parliament had ordered in imitation of the real Great Seal, remained in use till the one with the House of Commons was finished; then it, too, fell under the powerful blows of the blacksmith, and disappeared from history,—in fragments.

The 1651 seal was superseded in 1655 (or was it not in 1653?) by one that Cromwell had made for himself as Protector, and that certainly rather strongly smells of royalty. There is no House of Commons on this seal, for the following reason: The discredited "Rump Parliament" had determined to perpetuate itself. Cromwell decided to take a most drastic step. On April 20th he left Whitehall, and accompanied by five or six officers, ordered a party of soldiers to follow him to Westminster. These he posted at all the doors, and led another body round to an outer room close by where the House was sitting. "Clad in plain black clothes and grey worsted stockings," the general entered and took his place. Sir Henry Vane was passionately urging the immediate passing of the Dissolution Bill." Cromwell beckoned Harrison to him and said, "Now is the time I must do it." "Sir," replied Harrison, "the work is very great and dangerous." "You say well," Cromwell rejoined, and sat still another quarter of an hour. Vane ceased and was followed by the Lord General. He spoke calmly at first, but his enthusiasm increasing, he reproached the members for their self-seeking and covetousness. "You have no heart for the public good," he thundered out. "Your intention was to perpetuate yourselves in power. The Lord have done with you. He hath chosen other instruments that are more worthy. It is the Lord hath taken me by the hand and set me to do this thing." Several members rose simultaneously to protest against this language. Wentworth began a speech, when Cromwell, thrusting his hat firmly on his head, rushed into the centre of the House, and shouted, "Come, come, we have had enough of this! I'll put an end to your prating. Call them in," he cried to Harrison. The door opened and a party of soldiers made their appearance.

"You are no Parliament, I say!" vehemently continued Cromwell; "you are no Parliament. Begone! Give way to honester men." Then walking violently backwards and forwards he issued his orders. "Fetch him down," he said to Harrison, pointing to Speaker Lenthall. Lenthall refused. "Take him down!" Harrison touched the gown of the Speaker, and he immediately descended. Pointing to Algernon Sydney, Cromwell continued, "Put him out! Take him out!" Harrison and another laid their hands on Sydney's shoulder. He rose and retired. Sir Harry Vane was the only member who at this moment ventured on a remonstrance. "Sir Harry Vane, Sir Harry Vane," Cromwell interrupted, "you might have prevented this; but you are a juggler, and have no honesty! The Lord deliver me from Sir Harry Vane." Then striding toward the table and pointing to the mace, the Lord General said, "What shall we do with this bauble?" Addressing himself to a soldier, he continued, "Here, take it away." In the midst of this exciting scene, Cromwell frequently repeated: "It is you who have forced me to this; I have sought the Lord night and day that He should rather slay me than put me on the doing of this work." The house was soon empty. Cromwell seized the papers, put the draft of the Dissolution Bill under his short cloak, left the chamber, ordered the doors locked, and returned to Whitehall "Dictator of England." On the following morning a wondering crowd assembled outside the Parliament House, to the door of which some one had affixed a placard bearing these words: "This house to let, unfurnished." On December 16th Cromwell was declared "Protector of England."

On his seal, which is five and one-half inches in diameter, Cromwell sits on horseback, a stately figure, his right hand resting on his staff of office. Behind him, floating over his horse's crupper, is his new-made coat of arms. Lions he evidently objects to, crosses he does not, nor does he mind the harp; so, the arms of Great Britain have become: Quarterly, 1 and 4, *argent* a cross *gules* for England; 2, *azure* a saltire *argent* for Scotland; 3, *azure* a harp *or* for Ireland. On an inescutcheon *or*, a lion rampant, sable for Cromwell. The legend reads, "Olivardus.Dei. Gratia.Reipublicæ.Angliæ.Scotiæ.et.Hiberniæ," etc.—Rex? No, not quite; only, "Protector." On the reverse, all looks, at least at first glance, very royal. The garter is lacking and the mottoes are replaced by "Pax Quaeritur Bello." For some reason he returns to the supporters of Henry VIII, the Lion and the Dragon, instead of the Lion and Unicorn. The legend is simply: "Magnum . Sigillum . Reipub . Angliæ . Scotiæ . et . Hiberniæ," etc. On September 3d, 1658, mid the roar and crash of a mighty tempest, on the anniversary of the Battles of Dunbar and "The Crowning Mercy" of Worcester, wearied unto death by the toils of state, Oliver Cromwell, the greatest of England's monarchs, passed away, and his son Richard took, most unwillingly, his place.

Richard's seal was the same as his father's, except that Ricardus was substituted for Olivardus. Meanwhile Charles II did not allow the Republic to monopolize Great Seals. He promptly ordered one as soon as he heard of his father's death. This seal was made in Holland, at the Hague, the warrant for it was given June 6th, 1649; the price was to be 1,000 guilders, but the sum was subsequently reduced to 500 guilders. Charles took this seal with him to Scotland, and it is said that he caused it to be carried at the head of his army when he invaded England, 1651. This is no doubt the seal which Clarendon mentions as having been lost at the battle of Worcester, September 3d. No good impression of it remains. As soon as Charles got to Paris, he ordered another seal. On it, singularly enough, he styles himself "King of France." One would have thought that the mighty Louis would have objected, but he probably thought such an innocent fiction would do him no more harm than it did Charles good.

After the abdication of Richard Cromwell, May, 1659, England being without a government, the committee of officers called together the old "Rump" Parliament that had been so ignominiously treated by Oliver six years before. Accordingly they sought out the Independent members who had once sat in that body, and restored them to Westminster Hall. Forty survivors under Speaker Lenthall took their old places, and claimed to be the governing body of England (May 9th). On the 14th of May by order of this Parliament, one that all despised, the Cromwell Great Seal of England was smashed by the blacksmith at the bar of the House of Lords. They had that much revenge at least. Eleven days later Richard Cromwell resigned. Now, the old seal of 1651 was brought out again and remained in use during some twelve months: *i. e.*, from May 14th, 1659, to May 28th, 1660. On May 1st, 1660, Parliament received letters and a declaration from King Charles II, announcing a free and general pardon to all his subjects (with the exception of a few of the greatest of them) who within forty days should return to loyalty and obedience to him. The noble Charles, "whose word no man relied on," also declared his readiness, upon demand, to pass such a proclamation under the Great Seal of England. The sealing, however, of such a document had necessarily to be deferred to a future time, as the Great Seal was then, no doubt, with Charles at Breda, beyond the confines of the kingdom, where it could not legally be used, and the Great Seal, *de facto*, the one appended to the writs under which Parliament had just been summoned, took no notice of the King or his kingly office, beyond the devout expression of satisfaction that it had been abolished twelve years before.

Early in May, it was resolved by Parliament that all proceedings should begin in the King's name, and the question was raised as to what seal should be used. The Commons were for continuing the use of the one of 1651, but the Lords, whose existence it ignored, refused their concurrence, and much wrangling and inconvenience ensued. What was actually done is not now known; but on the 28th of May there was a repetition of that ceremony that must by this time have lost all charm of novelty. The Great Seal was solemnly brought into the House of Commons by the Lords Commissioners who had held it, and there delivered to the Speaker. The Speaker, probably with a sigh of annoyance, rose, and, followed by the House, wended his way on the usual errand. The blacksmith came, the seal was smashed, the ceremony was over, and that was all. Next day Charles, with his "made in France" seal, came to Whitehall, and England fell from the summit of her greatness to the lowest place she ever held.

In 1688, the emblem of sovereignty had one of its most curious adventures. William of Orange was in England. On the night of December 10th, 1688, the last of the Stuart kings, ignoble race, disguised, and like an escaping thief, stole out of his palace of Whitehall, with Sir Edward Hales, to flee to France. The day before, he had got from the Lord Chancellor, the notorious Jeffreys, the Great Seal. This he intended to carry with him to France and thus render difficult to his successor any exercise of the royal power. James and Hales went to the "Horse Ferry," where Lambeth Bridge now is, and procured a boat, intending to row up to Vauxhall, where James had arranged for horses to meet him to bear him to the coast. On his way up the Thames, fearing capture, James dropped the Great Seal into the river, delighted, no doubt, to think of the trouble he was causing. By one of those astounding chances that seem little short of miraculous, a day or two after, some fishermen were plying their trade at the same spot, when they noticed a strange looking lump of some kind in the net. Examined, to their astonishment, it proved to be the Great Seal of England that was playing this fish-like part. Needless to say that a few hours later it was in the hands of the proper officer, and the morose James was badly thwarted.

William and Mary.—The general design and arrangement of this seal is very much like that of Philip and Mary. The small inescutcheon, this time that of Nassau, appears in the middle of the shield, a token that the king was an elected sovereign, or as some take it, to show that he was a foreign prince. One very curious point should not be overlooked. It will be observed that no reference is made in this seal to Scotland, either in the arms or the legends, for which Mr. Wyon accounts thus: The seal must have been begun immediately upon the entry of William into London, in December, 1688; for it was in use by the 11th of March, 1689. It was not, however, until the 14th of March that the estates of Scotland resolved that William and Mary, King and Queen of England, France and Ireland, should be declared King and Queen of Scotland; and it was not until the 11th of May that they assumed the crown of Scotland, and took the coronation oath before the embassy sent from Scotland for that purpose. The harp of Ireland occupied the second and fourth quarterings of the arms. Counter Seal:—The sovereigns on horseback facing to the right. The Roman armor of the king, with the long, flowing hair or wig of the seventeenth century, is, of course, rather funny. There is on this seal a good view of London and the Thames, in which one can distinguish St. Paul's, the Monument, the Tower, the Bridge, and the Church of St. Olave.

Queen Anne.—Second Seal.—This seal was rendered necessary by the act of union between England and Scotland, which received the royal assent on the 6th of March, 1707, and which, amongst other things, provided that from and after the union there should be one Great Seal for the United Kingdom, and that it was to be different from the Great Seal in use in either kingdom. I may here remark in passing that from that day the Great Seal of England is also the Great Seal of the United Kingdom of Great Britain and Ireland. On this seal of Queen Anne, you cannot fail to be struck with the constant expression of the idea of the union. Look at the impaled arms over the throne, and on the first and fourth quarterings in the arms on the banner. Look at the union of the crosses of St. George and St. Andrew upon the other banner. Look at the rose and the thistle growing upon one stem, at the beginning of the legend. Look at the rose and thistle on the cornice of the throne, upon the arched recess of the throne, and upon the carpet. Roses and thistles are placed alternately between the words of the legend. The title, "Magnæ Britanniæ Regina," is also new. Another feature in this seal is noteworthy. James II had in his seal employed caryatic figures as mere artistic supporters of the throne. Queen Anne developed these caryatides into allegorical figures representing Piety upholding a spired church, and Justice holding her scales and lictors' rods and axe. You will notice that piety takes precedence of justice. Seeing these figures on the seal of good Queen Anne we cannot help remembering the passionate High Church conflicts which took place during this queen's reign. Counter Seal:—This is the only seal from Edward the Confessor to that of Queen Victoria in which an allegorical figure replaces the sovereign. In this case, the figure represents Britannia.

George III.—George, as we all know, used to glory in the name of a Briton, being the first of his family who had any great right to that title. He was proud in his ramblings about Windsor to be taken for a country gentleman. On his seal (the fifth), beneath the body of the horse, is a distant view of Windsor Castle and park; no other seal shows any such view. Counter Seal:—There is nothing else very remarkable about the seal of this rather obstinate old gentleman, except a redundancy of ornament and an unseemly amount of poorness of design, marking the downward tendency of the art that culminates in the commonplace thing that Great Britain uses to-day as a seal. The first seal of George III had the strange luck to disappear from the world and never after make its whereabouts known. Lord Thurlow was Lord Chancellor; he of whom Fox said, "I suppose no one was ever as wise as Thurlow looks—that is impossible." On a night in March, 1784, Thurlow's residence in Great Ormond Street, then rather a rural suburb, was broken into by burglars, who carried off the Great Seal and two silver-hilted swords belonging to the officers of the Lord Chancellor. In the morning, Thurlow, much depressed, went to Downing Street to tell the unpleasant news to Pitt, who had just been appointed prime minister for the first time, by George III; and they went together to Buckingham Palace to see the king. The Privy Council was summoned, and, in obedience to urgent commands, the engraver provided a replica of the Great Seal in thirty-six hours. It was strongly suspected that the burglars were in the employ of the Whigs: as a dissolution was supposed to be imminent, and as the Whigs wished to avert it, they stole the Great Seal; for, without the magic aid of that potent power no dissolution could be, whether the sovereign willed it or not.

The Great Seal of 1800 also met with some strange adventures. Lord Eldon, who was Lord Chancellor from 1801 to 1826 (except for a brief interval during the Grenville administration, which followed the death of Pitt in 1806), the longest time the office was ever held by one person, relates in his *Diary*, that, when he waited on the king in 1801 to receive the Great Seal, the sovereign, with whom he was a prime favorite, took it from between his coat and waistcoat on the left side, and handing it to Lord Eldon said, with an affectionate smile, "Here, I give it to you from my heart." Every night before retiring, Eldon saw that the seal was safe. One night in 1812, he was aroused by the cry of fire. His first thought was for the seal. He seized it, rushed to the garden, and buried it. Returning to the house, he was "so enchanted with the pretty sight of the maids, who had turned out of their beds and were handing buckets of water to the fire engine in their shifts"—it is only fair to add that on second thought he says he was "so alarmed for the safety of the Lady Eldon"—that he the next morning had quite forgotten where he had buried the Great Seal. His diary tells us, "You never saw anything so ridiculous as seeing the whole family down the walks (of the garden) dibbling with bits of sticks, till we found it."

The seal of William IV had also its adventures. The Lord Keeper was the able but eccentric Brougham. In the autumn of 1834, the city of Edinburgh decided to celebrate the victory of Reform by entertaining the ex-Premier, Lord Grey, at a banquet. Brougham intended—at least, so says Greville, who always enjoys a bit of scandal—"to go junketing on the Rhine with Mrs. P——." He found, however, that he could not leave the country without putting the Great Seal in commission at a cost, to him, of £1,400, so he decided to go to Scotland instead, but had to take the Great Seal with him; as by an ancient law it must be always in the personal custody of the Lord Chancellor. While staying at Rothiemurchus, the residence of the Dowager Duchess of Redford, the ladies, for a frolic, stole the Great Seal from Brougham's bed-room. When he discovered his loss he was in great distress, so, to relieve him, these sprightly dames told him of the trick; but insisted that he must look for it, blindfolded, in the drawing-room. To his great joy, he finally found it in a chest of tea; and to celebrate its recovery he allowed the ladies to bake pancakes in it. Finding this great fun, he afterwards used it for the same purpose to amuse the Marchioness Breadalbane at Taymouth. William IV, when he heard of these goings on, was furious, and never admitted Brougham to his presence again. Brougham, to show his resentment, sent back the Great Seal in a bag, intsead of going himself and delivering it with his own hands in its morocco box.

When the next ministry was formed, the king stipulated that Brougham was not to be Lord Keeper. His lordship did not die till 1868, but he never held the office of Lord Chancellor of England again. On the accession of William IV, in 1830, there was an odd discussion between Lords Lyndhurst and Brougham as to the ownership of the seal of George IV. Lyndhurst was Chancellor at the death of George, but a change of government followed, and Brougham occupied the office when the Great Seal of William was completed.

Lyndhurst argued that the old Great Seal really belonged to the preceding reign and, that as it was vested in him at the death of the sovereign, it was his. Brougham contended that the old seal continued in use till the new one was made, and therefore, as he was Chancellor, it belonged to him. William, with very kindly tact, decided that each should have one side, and tossed up to settle the ownership of the sides. He had them mounted in two very handsome salvers, and one went to Lyndhurst, the other to Brougham.

The three attacks of insanity of George III established the constitutional principle, that every act of the government requiring the sign manual of the king may be rendered legal by the imprimatur of the Great Seal affixed by the Lord Keeper, on the advice of the Cabinet, of which he is always a member.

VICTORIA.—The present seal is the third that has been used by Her Majesty. The first was submitted to her some sixty-two years ago, and differed little, if at all, from the one of to-day. Both sides are poor in design and low in relief, the allegorical figures of Justice and Faith being very prominent. In this case Justice is given the heraldic precedence; for, as you all know, the heraldic right, or "dexter," is the onlooker's left. The legend, on the reverse, is so very rich in comparison to the field, that it makes the seal look much like a dinner plate.

It is needless to add that the very great interest in seals to the antiquarian or the historian comes from the fact that a seal, say that of Charles the Bold of Burgundy (though I take this name at random), is a *contemporaneous* portrait of that sovereign. It was seen and approved by him and was made by the best artist he could select. We have, therefore, every possible reason to be certain that the seal in question represents him as he wished to be known to the world, that the costume, the accessories, are all correct and in perfect keeping, and that the heraldic parts are beyond reproach. Of course no other documents exist upon which we can place such entire dependence as pictures of the Middle Ages.

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THE COINAGE OF THE ANCIENT GREEKS.

BY WILLIAM N. BATES.

(Read March 1st, 1900.)

The science of classical archæology, as it is constituted to-day, is a very broad one. It not only has many different branches which are distinctly its own, but many others which are so closely connected with it that it is impossible for the investigator to neglect them. One of these allied branches is numismatics. But even when taken by itself, the study of the Greek and Roman coins is a large subject, and one which may be treated from several points of view. For that reason, in the present paper, the writer purposes to confine himself to a discussion of the origin and development of coins, the types of Greek coins, and then to call attention to the light which they throw on many problems in the fields of archæology and history.

In ancient times, there was considerable discussion as to what people invented coins. Pollux, who wrote in the second century of our era, tells us that five cities or nations claimed the honor: namely, the Athenians; the Naxians; Pheidon, King of Argos; the Phrygians; and the Lydians. Fortunately we are much better able to solve this problem to-day than the Greeks were in the time of Pollux, because systematic excavations carried on in different parts of the ancient world have brought to light specimens of coins of all ages from all the different cities prominent in antiquity. The oldest coins so discovered are the work of the Lydians, and there is every reason for believing that they are the oldest of all ancient coins. The Lydians, then, may be regarded as the inventors of coins.

The earliest of these Lydian coins dates from about the year 700 B. C. Previous to that time a certain amount of gold was weighed out in buying and selling; that is to say, exchange was carried on by means of weight. What the Lydians did was to take a certain amount of gold, or rather electrum, as a standard, melt it together, and put a mark upon it which would be a guarantee of its weight. That became the first coin. In appearance this coin is nothing but a small lump of electrum, or white gold, as Herodotus calls it, with scrapings on one side and three marks punched on the other. The value of this invention was at once apparent. The Greek cities in Asia Minor, and in Greece proper, took it up; engraved dies were substituted for primitive punches, soon inscriptions were added, and coins took their place as one of the necessities of the commercial world.

At first sight, it may seem surprising that the origin and development of so important a thing as coinage should take place in Asia Minor, and not in Greece proper; but if one remembers the history of the times, he will see that on the contrary it was a most natural thing. During the seventh and the sixth centuries. the Lydians were the wealthiest people of western Asia, and the most flourishing Greek cities were not in Greece at all, but in Asia Minor and in southern Italy. Southern Italy, in fact, later on got the name of "Magna Græcia" or "Great Greece." To take an example: while Athens was still an unimportant town, the Greek city of Sybaris in southern Italy had reached a state of unequaled prosperity; so much so, in fact, that in later times its name became proverbial for luxury. But that city ended its existence in 510 B. C., destroyed by its rival Croton. 510 B. C. was twenty years before the battle of Marathon, from which dates the beginning of prosperity in Greece proper, and more particularly in Athens. All the cities, then, in Asia Minor, southern Italy, and Sicily had their systems of coinage well established, in many cases, as early as the sixth century.

In Greece proper, Pheidon of Argos is said to have been the first to strike coins. The cities of Chalcis and Eretria in Eubœa, together with Corinth and Athens soon followed him, and in a very short time coins were struck in all the Greek cities in the Mediterranean. The earliest Athenian coin that has been preserved dates from the time of Solon; that is, from the first half of the sixth century B. C. This coin has as its type the head of Athena, and on the reverse an owl and an olive branch. The design was retained during the whole classical period with little variation. The archaic head of Athena was retained long after it had ceased to represent the art of the time; and even later on, when a more elegant head appeared on the coins, the type remained the same. That is to say, practically one type, with the head of Athena on the obverse and the owl on the reverse, was in use in Athens from the time of Solon down to the capture of

Athens by Sulla in 88 B. C., when Athenian silver coinage came to an end. It was a period extending over five hundred years.

So far I have only hinted at the metals employed for ancient coins. The earliest coin of the Lydians was of electrum, a natural alloy of gold and silver found in the bed of the River Pactolus and elsewhere in Asia Minor. It was usually regarded as worth about three-quarters as much as gold. It was soon replaced by silver or gold in all except a few places. The most notable exception was Cyzicus, whose staters of electrum were famous in antiquity. In some places electrum was made artificially, by mixing gold and silver; and it is quite likely that the chances which this offered for fraud explains why the material was so soon abandoned by most of the ancient cities in favor of a simple metal.

Gold was used for the coins of Persia and for certain coins in most of the Greek cities in Asia Minor, in Sicily, and Southern Italy; but in Greece proper, gold never played an important part. Such coins as were made of it date chiefly from the later period. Silver was the material universally employed, and the reason is not hard to discover. Gold was found in Greece proper only on the island of Siphnos. It was also found on the island of Thasos and in Thrace, but these last two places can hardly be counted in Greece. Neither had Greece any industry or natural product which could bring her vast wealth. In fact, it was not until the conquest of the East by Alexander that the European Greeks came to have gold in such abundance as to justify them in making large issues of gold coin. With silver it was different. Although it was not scattered over the ancient world so widely as gold, yet one of the richest silver mines was in Greece. This mine, or rather series of mines, was at Laurium in southern Attica, and constituted one of the chief sources of revenue for the Athenian state. The abundance of silver and the comparative scarceness of gold account, then, for the predominance of silver in Greek coinage. In spite of this fact, however, silver was relatively more valuable in ancient times than it is to-day. Herodotus tells us that in his day the relative value of gold to silver was as thirteen to one, and in some districts the proportions were even as ten to one.

Towards the end of the fifth century, bronze came into use for the smaller coins; and after Alexander, they became mere tokens like our own copper coins. We also hear of tin, lead, nickel, and even iron coins in certain parts of the ancient world, but they were local issues which never attained a wide circulation. Small iron bars were used for coins at Sparta in the earlier period.

In size, Greek coins differ, as, indeed, one might expect. The silver coins of Athens were often very diminutive. In fact, we have silver coins worth one-quarter of an obol, or about three-quarters of a cent. You can see that a piece of silver of that value would necessarily be very small. Bronze coins, too, were often very small indeed. On the other hand, large coins were never common. In the later period, we find large bronze coins now and then; and even in the best period, occasional large silver coins, but these were the exception, not the rule. A silver coin as large as our silver dollar was rare in ancient Greece. Such coins were to be found only in certain states, and were probably never employed very freely in circulation.

Greek gold and silver coins, as might be supposed, always represented a fixed weight. Of course the standard of weight, that is to say, the amount of silver or of gold put into a coin of a certain denomination, varied with the place where the coin was made. Some cities employed a heavier standard than others, and furthermore in some cities the coins were much purer than in others. In the more famous commercial cities, where it was necessary to have a system of coinage which demanded respect, as, for example, at Athens, the coins were of pure metal without alloy. But after the death of Alexander, alloy was used often in considerable quantities, especially in the coins of his generals in their various provinces in Asia.

In the early period, Greek coins may usually be traced back to one of three weights taken as a standard; that is, to the Babylonian gold stater of 130 grains, the Babylonian silver stater of 173 grains, or the Phœnician silver stater of 236 to 220 grains. Now, most Greek coins do not correspond exactly in weight with the figures just given, but are usually a little lighter. This is usually explained as a reduction from those standards, but it is by no means certain. For example, it is usually stated that the Phœnician standard came into Greece, was reduced, and became the standard for the coins of Ægina, which had a weight of 190 to 180 grains for a stater; and the Babylonian gold stater became the standard for the coins of Eubœa,—*i. e.*, 130 grains to the stater. However that may be, the Æginetan and Euboic standards—that is, staters of the weights I have just given—were the ones generally adopted by the Greek states. Some employed one standard, and others followed the other. Athens at first used the Æginetan standard, but in the time of Solon changed to the Euboic. That is what is meant by the well-known story, that Solon called in all the coins, and made one hundred new drachmas out of seventy-three old ones. It was simply a change from the Æginetan to the Euboic standard. During the classical period, the Euboic standard was the one employed by most of the Greek states.

I will now discuss rather briefly some of the types of Greek coins. When designs first came into use, something was usually selected as a type which was distinctly characteristic of the city which issued the coin. This might be the head of the chief god of the city, as at Athens; or might be connected with some legend belonging to the city, as on the reverse of coins at Corinth; or it might refer to some article of trade which the city exported, as the silphium plant on the coins of Cyrene. In short, the number of designs which appear on Greek coins is very large and very varied. Many of these types persisted for a long time. I have already pointed out how the type of Athens remained practically unchanged for nearly five hundred years. The designs on both sides of this coin were very appropriate. It was perfectly natural that the head of Athena should appear on the obverse of the coins of her city; and so, too, with the reverse,—the owl, the bird of wisdom, was under her especial protection, and the olive branch represented one of the great sources of revenue of the Athenians. In the Hellenistic period, an amphora was added on the reverse of Athenian four-drachma pieces to indicate Athenian trade in pottery. The winged horse Pegasus appeared on the reverse of the coins of Corinth, because, according to legend, it was at the fountain of Pirene that the horse attempted to drink and was captured by Bellerophon. The winged horse continued to be put on Corinthian coins during the whole of the classical period, and the Corinthian staters for that reason were popularly known as πῶλοι, or *colts.* So, too, the Athenian four-drachma pieces were known as κόραι or *maidens*, because of the head of Athena; much as we might speak of *eagles* or *napoleons.* Other well-known types were the turtle of Ægina, the shield of Thebes, the Zeus head of Olympia, and the chimæra of Sicyon. This chimæra was the mythical animal which had the head of a lion, a serpent for a tail, and a goat in the middle, as Homer describes it (Il. 6, 181): πρόσθε λέων ὄπιθεν δὲ δράκων, μέσση δὲ χίμαιρα.

Gnossus in Crete, where the labyrinth was situated, had on its coins an imitation of a labyrinth, etc. Sometimes the type was fixed by some event,—*e. g.*, Gelo, the tyrant of Syracuse, won a chariot race at Olympia, and, to commemorate that event, had a four-horse chariot represented on the coins of Syracuse. This became the type of coins of that city, and was retained long after Gelo's death.

The tendency of certain Greek cities to retain a type once selected is to be explained by the fact that certain coins had a very wide circulation, especially in semi-barbarous countries, and a change in type would carry with it a suspicion that the new coin was not as good as the old. This was the case with the Athenian four-drachma piece, which had a high reputation because of the purity of its metal. The Athenians did not dare to change the appearance of the coin. So, when Greek art was at the height of its development, when Syracuse was turning out coins which have excited the admiration of all subsequent generations, Athens, the leader of all the states in art and in culture, was still stamping on her coins the archaic head of Athena.

I pass now to another point, that of inscriptions on Greek coins. Greek coins were frequently inscribed with the name of the city which issued them, either in full or in an abbreviated form. Sometimes, in fact frequently during the later period, the name of a ruler or magistrate is put on the coins, and occasionally we find the name of the artist who designed the die. The earliest inscription known is found on an electrum coin, probably of Halicarnassus, which dates before 525 B. C., and very likely from considerably before that time. It is written retrograde in archaic letters ΦΑΕΝΟΣ ΕΜΙ ΣΗΜΑ,—"I am the sign of Phanes." By the term retrograde is meant writing which runs from right to left, instead of in the usual fashion from left to right. On early coins the writing is often retrograde. As one may easily imagine, these early coin inscriptions are of great value to the archæologist and especially to the epigraphist. Documents in stone are rare for the early period in most Greek cities, so that the coins are often valuable for showing what alphabet was used in certain places, and what particular forms the letters had.

Where a coin was issued under a king, the name of the king and perhaps his title were put on in the genitive case. If the coin was issued by an independent city, the name of the people of the city was put on in the genitive plural. But as I have said, words were frequently abbreviated, and sometimes only a single letter was written; as, for example, on the coins of Corinth, where we find the letter ϙ standing for Κόρινθος.

But perhaps the most interesting inscriptions on Greek coins are the artists' signatures.* These are found chiefly on coins of Sicily and of Magna Græcia of the fifth and fourth centuries B. C., especially on the coins of Syracuse, Catana, Metapontum, Tarentum, Heraclea, Velia, Thurium, and Camarina. The finest coins in existence are the great decadrachms of Syracuse designed and signed by Cimon and Euænetus. The fact that these coins were signed shows that they were regarded as works of art. The name of the artist is either in the nominative or genitive case, and is usually introduced in very fine letters into some less important part of the design. For example, on the Syracusan coins having on the obverse the head of Persephone with dolphins about it, the artist signs on one of the dolphins, or on the band binding the hair of Persephone. On a tetradrachm of Syracuse we have the name of Euclides cut on Athena's helmet. In another case, we have the name of Euænetus cut in minute letters on a tablet held by Victory. In a few cases, we find the artist's name written twice. Just why this is so is not certain, but it seems likely that in this way the artist wished to indicate that he was both the designer and striker of the coin. There were two artists named Cimon who designed Sicilian coins, one living about 470 B. C., and the other about 400 B. C. Quite likely one was a descendant of the other. Other artists' names which occur are Euarchides and Execestides. Rarely the same name is found on coins and on engraved gems. For example, on a Syracusan tetradrachm of about 400 B. C. we find the name Phrygillus, which appears also on a fine gem of the same period which has carved upon it Eros playing with jack-stones. Very often, as one might expect, the artist's name is abbreviated, so that frequently we do not know what the actual form of the name was.

Signatures on coins from other parts of the ancient world are not numerous. On a coin of Clazomenæ we have: Θεόδοτος ἐπόει "Theodotus made it," in two lines; and the head of Apollo, which forms the obverse of the coin, is so arranged that space was left for it. Again, on a coin from Cydonia in Crete, there is a head of

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*See Middleton's *Ancient Gems*, p. 89, ff.

Ariadne and an inscription Νεύαντος ἐπόει, "Neuantus made it." Coins struck in Greece proper almost never have the artist's signature. A possible exception to this is a coin struck by the Arcadian confederation in the fourth century B. C., which has on the reverse Pan seated on a rock, on which is carved either ΟΛΥΜ or ΧΑΡΙ as the case may be. It is not certain, however, that these are artists' signatures.

It is very rare indeed that the value of a Greek coin is indicated upon it either by an inscription in letters or by figures. The value of the coin had to be learned by its size and by the design upon it. Sometimes attempts were made to have a system by which the relative value of certain coins might be indicated. For example, the Thessalian states tried the device of putting a figure of Pegasus on the drachma, the fore part of the horse on the three-obol piece—that is to say, on the half-drachma—and the head alone on the obol. So, too, on some of the coins of Thebes, the fractional parts of a drachma were indicated by parts of a shield. But these were exceptions to the usual rule.

About the time of Alexander, portraiture began to make its appearance on Greek coins. Previous to that time, the only heads stamped on the coins were those of gods. It has been conjectured that the first coins were struck in the precinct of the chief temple in each city, so that, in a way, the coin had a sacred character. Thus it would have seemed presumptuous, if not sacrilegious, for any mortal to substitute a portrait of himself for that of the god. After the death of Alexander, Lysimachus put the head of Alexander on his coins. It was a deified head, so to speak; that is, it was the head of Alexander wearing the lion's skin, after the manner of Heracles on Alexander's own coins. This type continued for some time, and no doubt gives us an excellent portrait of Alexander.

At this same time, Ptolemy, the son of Lagus, otherwise known as Ptolemy Soter, put his head on the coins of Egypt. Ptolemy, it will be remembered, was one of Alexander's generals, who after the death of his king, seized Egypt, and proceeded to make himself master of it. He was the first of the line of the Ptolemies, and he wished to emphasize his power by putting his portrait upon his coins. His successors followed him, and so did the other generals and their successors in the various parts of western Asia and Asia Minor, where they had succeeded in establishing themselves as kings. From about the year 300 B. C., then, until Rome became master of the various countries subject to Greek influence, we have continuous series of portraits of the various rulers of the Greek world, sometimes even accompanied by those of their wives. These coins, apart from the interest which a series of authentic portraits naturally carries with it, are most useful to the archæologist in helping him to identify the numerous sculptured heads which have come down to us from Hellenistic times; and likewise in identifying the heads frequently cut on Greek gems. This, therefore, is one of the ways in which coins are useful to the archæologist.

But from an archæological point of view, coins are of much value for the information they give of lost works of art. During the late Greek period, it was the custom of the different Greek cities to represent on their coins, especially on their copper coins, any famous statue which the city might possess. If the city had a work of Phidias or of Praxiteles, the statue would almost certainly be reproduced upon the coins of that city. The value of the practice is apparent at once. Most of the works have long since perished so completely that no copies of them remain. Some survive in copies made long after the artist was dead. If we wish to know anything about the artist who made one of these statues, perhaps a work about which ancient writers are full of praise, if we wish to find out what place he had in the development of Greek art, we must try to discover the characteristics of his style. If we have no original from his hand we must take the copies which exist, making, of course, due allowance for the fact that they are copies. But, first, we must prove that they are copies of a work by the artist whom we wish to study, and that is where the coins are of the greatest value. To take an example. We are told that the people of Cnidus had a statue of Aphrodite, the work of Praxiteles. This statue was in many respects the most famous statue in antiquity,—certainly it was the most famous marble statue. It added enormously to the reputation of the sculptor and to the fame of the town, and Greek and Roman writers alike are full of extravagant praises of its great beauty. Now, in the various museums of Europe there are numerous statues which are copies, more or less free, of this famous work at Cnidus. How, then, is the copy which comes nearest to the original to be identified? The answer is not a difficult one. Examine the coins of Cnidus. There, in fact, we find the statue represented, and we are thus enabled to pick out the copy which follows most closely the original work of Praxiteles.

Let me take one or two more examples. You may remember the fine group in the Glyptothek at Munich, consisting of a draped female figure carrying on her left arm a nude child. This group used to be known as Leucothea and Palaemon, a rather absurd designation, which has no evidence in its support. The group is to-day universally acknowledged to represent Peace, personified, carrying the child Wealth, a copy of a work of the sculptor Cephisodotus. Cephisodotus, the father of Praxiteles, made for the people of Athens a group representing Peace carrying the child Wealth. So much Pausanias tells us; but we have no description of the work. It so happens that two copies of the child exist, one of which was found in the harbor of the Piræus and is now in Athens; the other is in Dresden. The fact that parts of several replicas exist shows that the original was a famous statue, which probably belonged in Athens where one of the parts was found. The object which the child was holding in its left hand is broken off in all three cases. Here the coins come to our assistance. On one of the coins of Athens there is a group represented which is identical with the Munich group, and the child is holding in his hand a horn of plenty. This, of course, identifies him as Wealth; and as we do not hear of this god associated with any other divinity than Peace, and then only in this one group, we may feel confident that we have in the Munich group a copy of the statues mentioned by Pausanias. We are thus enabled by means of a coin to study the work of this sculptor, whom we should not otherwise have known, as no other work of his can be identified.

Another very striking example of the value of coins to the archæologist was the identification by Dr. Waldstein, of Cambridge University, of what was known as an Apollo head in the British Museum, as a head of the Hera of Argos. Any one who heard Dr. Waldstein's lecture before the Pennsylvania branch of the Archæological Institute last year, must have been struck, I am sure, with the masterly way in which he showed that this so-called Apollo head was really a Hera, and he did it simply by using a coin of Argos.

The coins of Athens naturally have represented upon them a great number of statues, because the city was so rich in works of art of this kind. Among others we find the Athena Parthenos and the Athena Promachos, both works of Phidias. The latter statue, it will be remembered, was the colossal bronze statue which stood on the Acropolis at Athens. After remaining in its original position for many years, frightening away the Goths under Alaric, when they entered the Acropolis, it was, in all probability, carried to Constantinople, where it remained until the beginning of the thirteenth century. In the year 1203, it was pulled down and destroyed by a Christian mob, because the goddess seemed to them to be beckoning to the crusaders to return again out of the West to Constantinople.

In addition to the ways which I have already mentioned, Greek coins, and more particularly Greek silver coins of the best period, are useful to the archæologist in showing the development of art in certain cities. The coin dies must have been cut, especially in the early period, by prominent artists in the various cities, and, as they are original works of art, they afford us considerable valuable testimony as to certain local schools. Of course this must not be carried too far, for frequently the artists of one city might design the coins for another; just as, for example, the plates for the banknotes of modern Greece are engraved in London; but where a school of artists is known from literary evidence to exist, the coins are very sure to give a good idea of their style.

The types of the gods, too, are frequently known from coins alone. It was only natural for each city to put upon its coins the finest copy which could be made of the chief statue of the patron god which the city possessed. As a result of this practice we are able to get a good idea of the face of almost every famous cult statue in Greece, and very often these statues are scarcely known from literary evidence.

Coins, too, are useful—and here they concern chiefly the historian—in making known the importance of certain towns almost unknown to-day. We may read in some short paragraph in a Greek or Roman writer that such and such a town was destroyed upon a certain occasion, and hear nothing more of it. Our conclusions would naturally be that the town was unimportant and deserved its obscurity. But if we find that a century before its destruction this town was issuing a fine set of coins, our ideas of its relative importance at once change.

What I have said in regard to Greek coins applies to all the countries bordering upon the Mediterranean or adjacent to it.

They were, of course, inhabited to a greater or less extent by Greeks, and Greek art dominated them all. Even Carthage had its coin dies cut by Sicilian artists, and one easily recognizes the type of Syracuse upon its coins.

The Greeks as a rule did not coin large coins, as I have already said. In Athens the four-drachma piece was the standard; that is to say, it corresponded in a way to our dollar. The Athenians did coin a ten-drachma piece, but it is very rare and is to be found only in a few large collections. The Athenians coined a two-drachma piece, a one-drachma piece, and fractions of the drachma too numerous to mention. These were all of silver. The largest coin of ancient times was a twelve-drachma piece of Carthage; and the finest, a ten-drachma piece of Syracuse.

Our information about the Greek mint is very scanty, and for that reason I do not attempt a discussion of it. It is very likely that it resembled the Roman mint, of which we know more. Whoever has recently visited Pompeii and examined the house of the Vetii, may remember that one of the wall-paintings there represents a mint operated by cupids. No doubt it gives us a very good idea of an ancient mint.

With these remarks I will bring my paper to an end. I have been able to do little more than to touch upon certain important points in the subject, but I think I have said enough to make clear what an amount of valuable information is to be obtained from a proper study of what may justly be called original documents. To the archæologist they are an important source of help and one which cannot be neglected.

DISCUSSION OF THE PROCEEDINGS OF 1892-98.

BY EDWARD GILBERTSON, OF ILFRACOMBE, ENGLAND.

Extract from a private letter of March 17th, 1900.

(Read April 5th, 1900.)

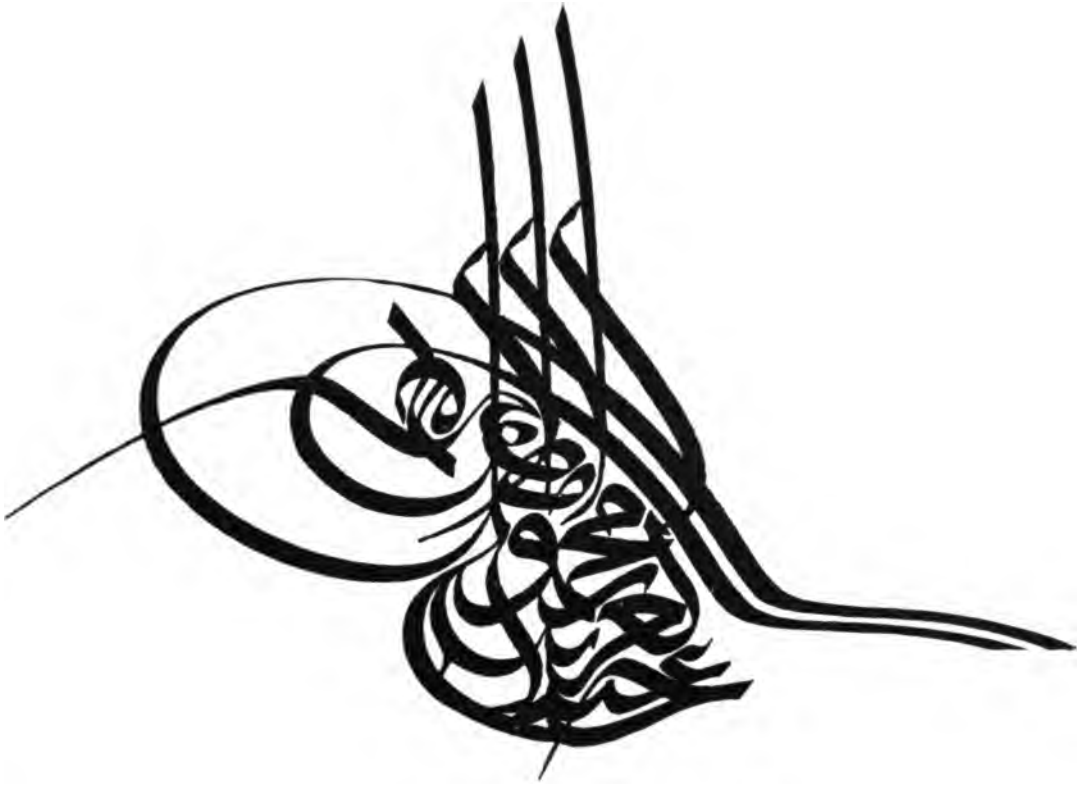
. . . I am exceedingly obliged to you for sending me a copy of the Proceedings of the Numismatic and Antiquarian Society, and for the separate copy of Mr. Stevenson's excellent paper on "Cross-bows." Will you kindly give Mr. Stevenson my hearty thanks for it, and he can hardly have anticipated the pleasure it would be to me to read it, and how much it would interest me. Many years ago, after examining the cross-bows in the Musée d'Artillerie, in Paris, at Munich, the castle of Ambras near Innsbruck, and in various parts of Italy, I proposed, in conjunction with Poldo-Pezzoli, of Milan (who bequeathed his splendid collection of works of art of all kinds, and the charming palace containing them, to the city), to get together the materials for a monograph on cross-bows and cognate military weapons. Talking of our project to that many-sided minister, Cavour, and asking his help, he said to me in his joking way: "We have so many dangerous lunatics and enthusiasts in Italy, that I look upon it as a duty to encourage the harmless ones; so, although your project helps neither the unification of Italy, nor the improvement of agriculture in Lombardy (his two pet ideas), you shall have access to all the royal and national collections of arms and to the documents relating to them, and I will do all I can to help you abroad." But, in spite of all, it came to nothing, for Cavour died, and Poldo-Pezzoli died, and I became absorbed in more serious matters; and so it happens that I am indebted to Mr. Stevenson for the resuscitation of an old love of more than forty years ago, and for the pleasure of seeing the work I hoped to aid in so well done by another.

I have delayed writing in order to read through the Proceedings, which have interested me greatly.

. . . The use of the extended hand (page 26) as a magical symbol reminded me of the impression of a hand on the internal wall of St. Sophia at Constantinople. Tradition calls it the impress of the bloody hand of Mahmud the Conqueror, when he took possession of the church in the name of Islam. But it is too large to have been done by a man's hand, and has been religiously kept up ever since. Was it in any way connected with the superstition referred to? The Tughra, or monogram of the Sultan, is a rather rude caligraphic rendering of this hand, it is said. I am sending you the Tughra of Sultan Abdul Aziz by this post. It is a group of Arabic characters, so placed and arbitrarily modified, that it is exceedingly difficult to decipher, more especially as some of the characters are read twice in different words. The long sabre-shaped characters representing the fingers, are alifs and lams (a's and l's), and the whole reads thus: "Sultan el-barrain wa khan el-bahrain, Sultan Abdul Aziz Khan, ben Sultan Mahmud Khan." That is: Sultan of the two lands, lord of the two seas, Sultan Abdul Aziz Khan, son of Sultan Mahmud Khan. The Tughra is alike for all sultans save in the lower part, containing the proper names of the sultan and his father, and is famous as a specimen of caligraphy. It was written by the Secretary of Sultan Abdul Aziz.

The paper on the trade of "Behring's Straits" interested me greatly and was quite new to me. Equally new and interesting was the account of carving hard stones, like granite, with stone chisels; and the effect of percussion on the stone to be carved, the chisel losing only one-half of the substance removed by it. I wonder if that depends on the same laws that enable a disc of soft iron, revolving rapidly, to cut into a hard file with little loss of its own substance.

On page 111 is not Dr. Schlegel a little out in his date for the introduction of tobacco into China—1650? Sir E. Satow quotes an official Japanese document of 1578, recording the registration of a man in Kiyoto as "a tobacco dealer." It is certain that in the beginning of the seventeenth century there were at least two smoking clubs in Kiyoto; and that by 1612, two edicts prohibiting the cultivation of tobacco had been issued. The only "namban" (southern barbarians) trading with Japan in the sixteenth century were the Portuguese, the Spaniards not appearing until the seventeenth. I am under the impression that the Portuguese introduced tobacco into China even before bringing it to Japan, and that the Japanese tobacco pipe originated in China as to its form and material; for it was of iron, stem and bowl.



The Tughra, or Monogram, of Sultan Abdul Aziz.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

The numismatic portions also interested me greatly, and made me long to see the coins and medals described; for I have a few hundred Greek and Roman coins, as well as Turkish, that I collected in Turkey and Asia Minor. Several of them are of personal interest to me from various causes which would not interest others. For instance, in riding through Wallachia, I met a boy with a coin hanging round his neck, evidently a Roman denarius coated with dirt and grease. It was dug up, he said, by his father, and I bought it of him for a franc. It proved to be one with the DACIA CAPTA reverse. Strange that it should be found there.

Another odd find was when I was visiting the ruins of Tralles in Asia Minor. Clearing out a grave sunk in the rock, in which I found nothing but rubbish, at the very bottom, on turning over a piece of hewn stone, I found beneath it a wretched little pfenning of Lorraine, Louis XV, of base metal, as thin as paper, bent and split.

"The thing itself was neither rich nor rare,
One wonders how the devil it came there."

But another find was very different. During a violent storm, when I was at Smyrna, the rain washed out of the hill on which the castle stands some coins, not an infrequent occurrence. A man had found two, black and coated with lime rubbish, and I bought them of him, not knowing what they were. Cleaning them, they proved to be tetradrachms, one of Alexander the Great, the other of Lysimachus, with the head of Alexander, both in the most perfect condition. The Lysimachus is the most perfect I have seen; and Baron Prokesch, the Austrian Ambassador at Constantinople, offered me £20 for it, the price for which one had recently been sold by auction in London. As it was the finest example I had of Greek glyptic art, I would not sell it. The Alexander is quite as fine, but not so rare.

I have also forty or fifty very perfect gold staters of Alexander the Great and the two Philips, part of a find in Cyprus, that I rescued from the grip of the Turkish official by buying them of the peasant who found them, paying for them in sovereigns, weight for weight. I let Baron Prokesch, who had perhaps the finest collection of gold staters known, and the Vienna Museum select all the types they had not, and gave others to some of our public collections. All that I have, like many of the others, are absolutely perfect, as if fresh minted, and interesting from the accuracy of their weight, although coined in many cities that enjoyed the right of coining. I gave the British Museum all my gold Turkish coins that they had not, for they are of more use there than in my possession.

What a loss the death of Dr. Brinton is to the Society; for he must have been a man of very varied knowledge, one I should have liked to know, it is so pleasant picking up knowledge *viva voce.*

But almost every line of the Proceedings interested me, and you can imagine the good deed you did in sending them. In three weeks I complete my eighty-seventh year. . . .

A HEBREW OMER OF THE YEAR 1800.

BY CHARLES J. COHEN.

(Read May 3d, 1900.)

The word "omer" indicates a measure, equal to one and three-quarters quarts. Some authorities think the word means, literally, "handful;" and it is explained as the quantity used for an offering of the first grain, at the time when the sickle first went into the ripened grain at the season of springtime, the celebration occurring on the fiftieth day after Passover. That has been a custom among the Jews from time immemorial. Some authorities consider that the observance of the Pentecost is, in fact, pre-Mosaic, associated with the usual ceremony of an agricultural people and naturally occurring at springtime. However that may be, there is no doubt but that the observance of the Omer—that is, the counting of the fifty days from the second day of the Passover—has been in use from the biblical period up to the present time, somewhat over three thousand years.

The Omer was instituted soon after the Exodus from Egypt, about 1100 before the common era, as ordered in the Book of Leviticus, Chapter xxiii, Verses 15 and 16:

וּסְפַרְתֶּם לָכֶם מִמָּחֳרַת הַשַּׁבָּת מִיוֹם הֲבִיאֲכֶם אֶת עֹמֶר
הַתְּנוּפָה שֶׁבַע שַׁבָּתוֹת תְּמִימֹת תִּהְיֶינָה

"And ye shall count unto you from the morrow after the holy day (the Passover), from the day that ye bring the Omer of the wave-offering, (that) it be seven complete weeks."

עַד מִמָּחֳרַת הַשַּׁבָּת הַשְּׁבִיעִת תִּסְפְּרוּ חֲמִשִּׁים יום

"Even unto the morrow, after the seventh week, shall ye number fifty days."

It may be noted in passing that the number seven has a marked significance in the Scriptures; there are seven days in the week; seven weeks from Passover to Pentecost; the Jubilee Year, when the land was untilled, was every seventh year, and so forth.

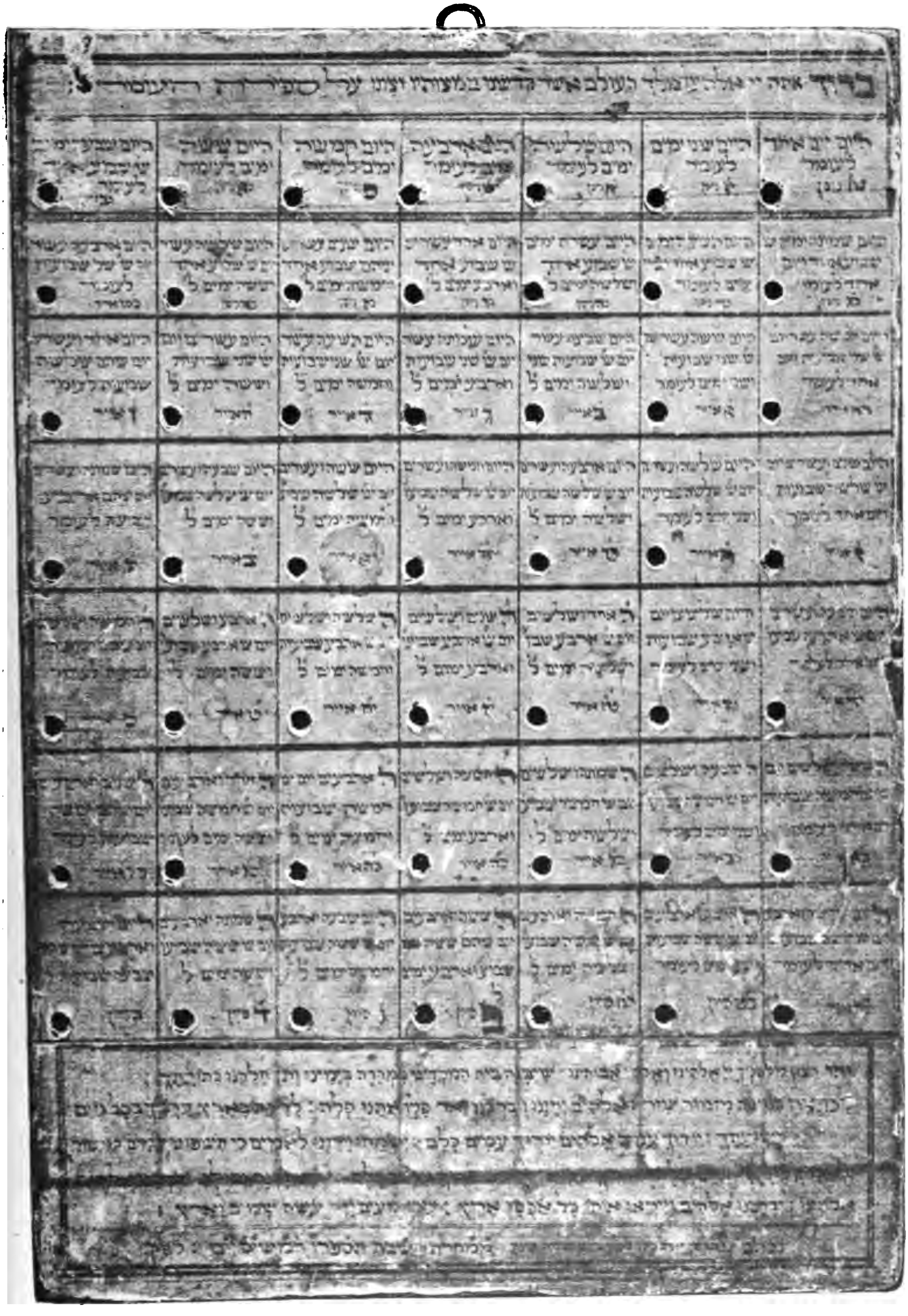
The observance of Jewish holidays was notably identified with generous gifts to the poor, and with the avoidance of gathering the gleanings of the field, as mentioned in the Book of Ruth, and was of a generally joyous character. In these respects it formed a striking contrast to the practice of idolatrous rites that prevailed in neighboring countries. A rabbinical tradition has stood for more than twenty centuries to the effect that the Pentecost is the actual anniversary of the giving of the Decalogue to Moses; and both the Pentecost and Passover holidays are celebrated as anniversaries of the bestowal of liberty and freedom upon the Israelites at the time of the Exodus from Egypt.

It is a peculiar circumstance in connection with the observance of the numbering, that the orthodox Hebrew clergyman will not perform the marriage ceremony on any day during the first thirty-two. In the time of Rabbi Akiba, in the first century of the common era, a fearful plague broke out on the second day of the Passover, which is the first day of the Omer, and after continuing for thirty-two days and carrying off thousands of people, on the thirty-third day it entirely ceased. In memory of the calamity, this period was ordained to be kept for all time as a season of mourning, and not until the thirty-third day was any wedding or other joyous ceremony to be indulged in. This thirty-third day, called in Hebrew "Lag La' Omer" (the Hebrew words for thirty-third day of the Omer), was named Scholars' Feast, the epidemic having been most severe among that class of residents.

Before the days of the modern calendar, it was customary for every Israelite to make himself a system of counting, in order that there might be no mistake as to the record. On each day, toward evening, during the progress of the evening prayer, the worshiper would offer a special blessing, and would make record of the particular day by number; in this manner, an accurate account could be kept in accordance with the Levitical injunction. It is probable that the form of prayer used at the present time, was adopted in the time of Ezra, the Scribe, during the captivity in Babylon. The temple had then been destroyed, and the synagogue worship introduced.

The English translation of this particular Omer is as follows:

בָּרוּךְ אַתָּה יי אֱלֹהֵינוּ מֶלֶךְ הָעוֹלָם אֲשֶׁר קִדְּשָׁנוּ
בְּמִצְוֹתָיו וְצִוָּנוּ עַל סְפִירַת הָעֹמֶר:



ברוך אתה יי אלהינו מלך העולם אשר קדשנו במצותיו וצונו על ספירת העומר:

A Hebrew Omer of the Year 1800.

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"Blessed art Thou, O Lord our God, King of the universe, who hast sanctified us with Thy commandments, and commanded us to count the Omer."

הַיּוֹם יוֹם אֶחָד לָעֹמֶר

"To-day is one day of the Omer."

הַיּוֹם שִׁבְעָה יָמִים לָעֹמֶר שֶׁהֵם שָׁבוּעַ אֶחָד

"To-day is seven days, one week, of the Omer."

הַיּוֹם שְׁמוֹנָה יָמִים לָעֹמֶר שֶׁהֵם שָׁבוּעַ אֶחָד וְיוֹם אֶחָד

"To-day is eight days, one week and one day, of the Omer."

הַיּוֹם אַרְבָּעָה עָשָׂר יוֹם לָעֹמֶר שֶׁהֵם שְׁנֵי שָׁבוּעוֹת

"To-day is fourteen days, two weeks, of the Omer," etc.

יְהִי רָצוֹן מִלְּפָנֶיךָ יי אֱלֹהֵינוּ וֵאלֹהֵי אֲבוֹתֵינוּ שֶׁיִּבָּנֶה
בֵּית הַמִּקְדָּשׁ בִּמְהֵרָה בְיָמֵינוּ וְתֵן חֶלְקֵנוּ בְּתוֹרָתֶךָ לַעֲשׂוֹת רְצוֹנֶךָ

"May it be thy will, O Lord, and the God of our Fathers, that the Sanctuary be built speedily in our days, and give us a portion in Thy law."

Psalm 67.—"To the Chief Musician on Neginoth, a psalm or song:

"May God be gracious unto us, and bless us; may He cause his countenance to shine upon us. Selah. That Thy name may be known upon earth, and Thy salvation among all nations. All nations shall praise Thee, O God! all nations shall praise Thee. O let the people be glad and sing for joy; for Thou wilt judge the nations righteously, and govern the people of the earth. Selah. All nations shall praise Thee, O God! all nations shall praise Thee. Then shall the earth yield her increase; and God, even our God, will bless us. God will bless us, and all the most distant parts of the earth shall fear Him."

עֶזְרִי מֵעִם יי עֹשֵׂה שָׁמַיִם וָאָרֶץ׃

Psalm 121.—"My help is from the Lord, who made Heaven and earth.

"It was written by the unworthy one, Joseph Cohen, at present in Lancaster.

"On the morrow, after the Sabbath, ye shall count **fifty days.**

80	מִמָּחֳרַת
300	הַשַּׁבָּת
60 6	תִּסְפְּרוּ
8 40 10 40	חֲמִשִּׁים
10 6	יוֹם
560	

(5000 being understood.) According to the smaller reckoning or short count. That is, the year 5560, Hebrew reckoning from the Creation, or the year 1800 of the Common Era.

The character of letter used is the Assyrian form, adopted in Babylon during the captivity. Some of the lines have the masoretic text, with the addition of the vowels, the Hebrew writing being one of consonants. The text was compiled and put in written form during the sixth century of the Common Era.

The maker of the Omer, Joseph Cohen, came to America from London in 1766, at the age of twenty-one years, and procured a position with Gratz Brothers in Philadelphia, as clerk and collector. After a visit to England, he returned to Philadelphia, residing here from 1779 to 1783, finally removing to Lancaster, where he remained until 1810. While in the city of Lancaster, he lived with Mr. Gratz, having a place in his home similar to that occupied by the modern chaplain; for, at that time, Israelites of all conditions were very well educated in Hebrew, and were thoroughly familiar with the prayers and the religious ritual that always entered into the daily life. It was in this capacity that my ancestor lived with Mr. Gratz, during which time the Omer now shown was prepared.

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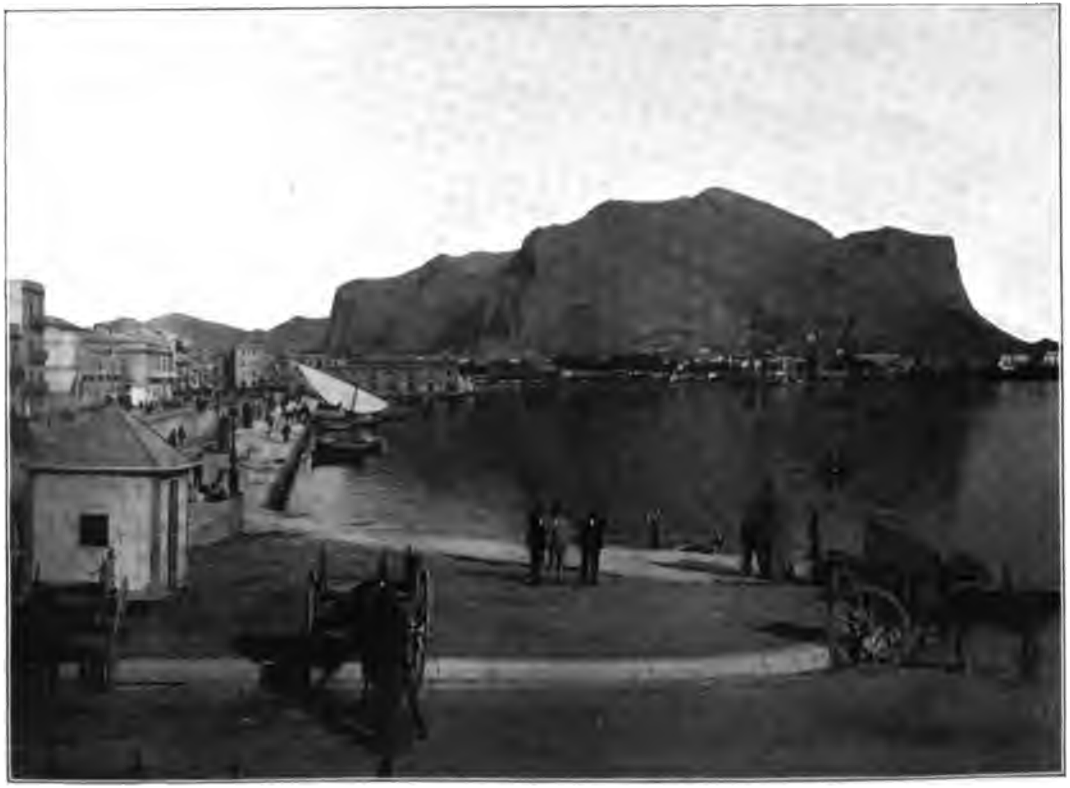

1. Monte Pellegrino and Via Borgo, Palermo.

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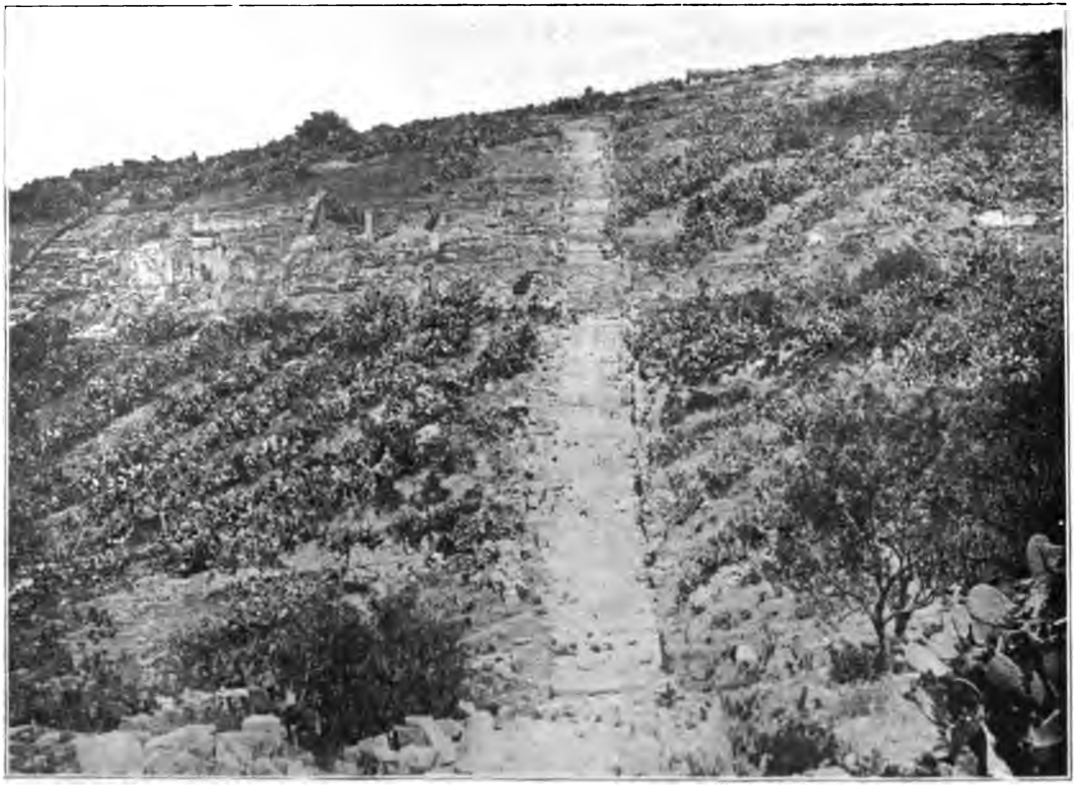


2 Via Sacra, Soluntum, Palermo.

LETTERS FROM SICILY.

BY JOHN T. MORRIS.

(Read May 3d, 1900)

Second month 11th, 1900.

MY DEAR MR. CULIN:

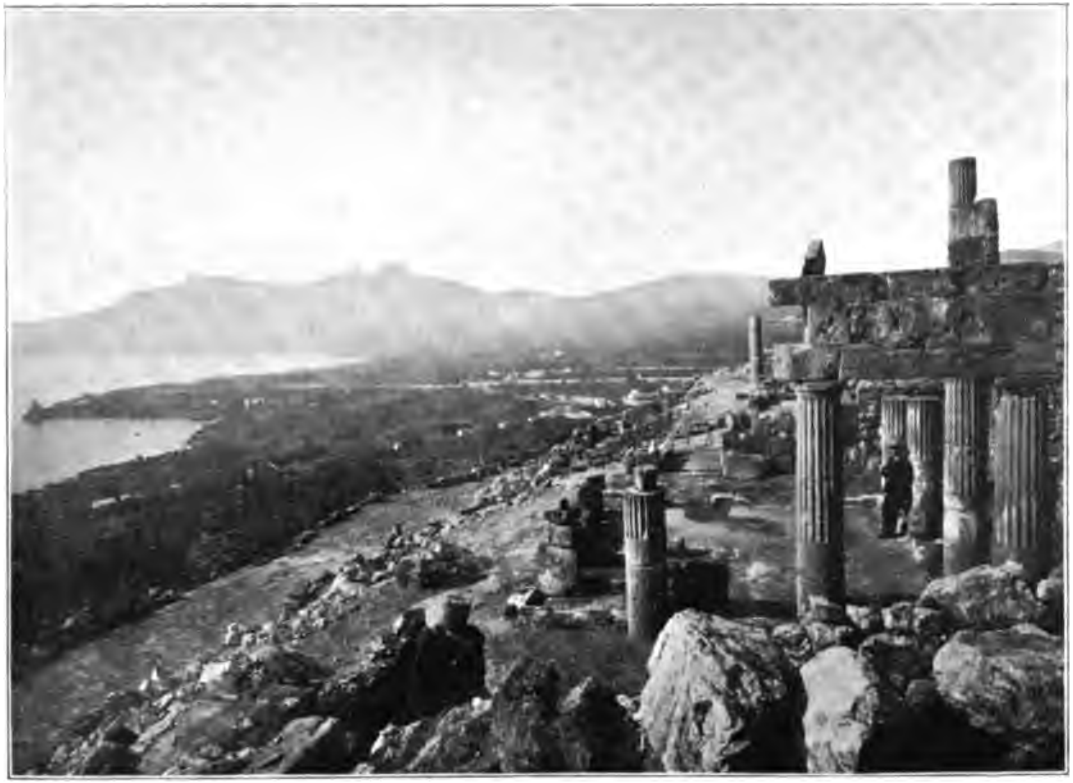
Circumstances unforeseen occur which separate one from congenial duties, and friends, and pleasures anticipated have to be postponed for evenings looked forward to. Little did I think, when accepting the valued honor of the Presidency of your Society, that in less than two months I should be among the palm trees of the pretty and very interesting city of Palermo; but that unknown which directs our footsteps led me to the charming spot, so impressive and beautifully situated, and the harbor of rest for many seasick bodies. To the right is a landmark the people of Palermo are justly proud of, Monte Pellegrino, irregular in outline, soft in curves and color effects. To the extreme left is Monte Catalfano. Between those two points the Mediterranean makes a graceful curve, forming the beautiful Bay of Palermo. Inland the same two mountains are, to the eye, connected by a range of mountains, and, in the amphitheatre so formed, lies Palermo. In ancient days Palermo was known as Panormos, one of the very important strongholds of the Carthaginians. On Monte Catalfano are now seen the ruins of the ancient city of Soluntum; and it was these ruins which suggested this letter and the sending of the accompanying photographic views, that come, I believe, within the scope of the work of our good little Society, dating, as the ruins do, back to the Phœnicans.

Photograph No. 1 shows Monte Pellegrino. The principal part of the city lies back of the street that runs south, toward the observer.

Photograph No. 2 shows a small portion of the Via Sacra, the old highway to Soluntum. The ascent is made from the valley by an easy, zigzag, though rapidly ascending, road, now very rough, on the exposed natural rock. I had not gone far before the thought suggested itself: Is this the bed of the ancient road? My doubts were, indeed, very strong in the negative, although no better way was evident; but, towards the top, the original stone covering of stones about fifteen inches square, as shown in the photograph, became visible, and the entrance to the old town was easy, 1,200 feet above the sea.

The Via Sacra was particularly interesting, as explaining in some degree the (to me) unanswerable question what has become of the roads of Palestine, over which vast armies passed to and fro? In going through that country one is struck with the absence of roads through the mountain passes,—no sign of roads even for horseback riders untrammeled with heavy weapons of war. Here at Soluntum, one ascends the mountain over the rough, very rough rock; and the question arose is this the old highway, or does it remain yet to be discovered? But when that portion of the road is met where the pavement is intact, then it is made manifest that, as time passes, the stones have been displaced by man or the torrents; and so it may have been in Palestine, where the wayfarer through that inhospitable country has now to risk life and limb.

Photograph No. 3 shows what we saw looking south, but conveys only a faint idea of the beauty of the landscape. The little ruin is called Gymnasium. Why, I cannot imagine; for it is so small. The figure standing by one of the columns of yellow tufa gives a basis for estimating sizes. The few columns have been collected and erected by the authorities; and it is a pleasure to see the intelligent work of the archæologist and the care the government has bestowed on preserving the ruins. Walls are standing which indicate the size of the houses; but, beyond telling with how small houses people were satisfied in old days, they possess nothing of interest; except one house higher up than the others, where the stucco is painted in imitation of marble, verd-antique, and porphyry, instead of the simple colors used in the decoration of Pompeii. However, what other color is left is mostly Pompeiian red. On the floor is a small sample of mosaic pavement. The house is enclosed, to protect it from the weather and vandals. From this house, looking down the hill, one sees roads winding around so that vehicles could ascend with comparative ease, while the Via Sacra shown in photograph No. 2 would have been impossible for them. In one of the houses receptacles cut out of a hard black stone are still in their original place. Large masonry water tanks with cemented sides are still in reasonably good condition.



3. Gymnasium and the View Southward, Soluntum.

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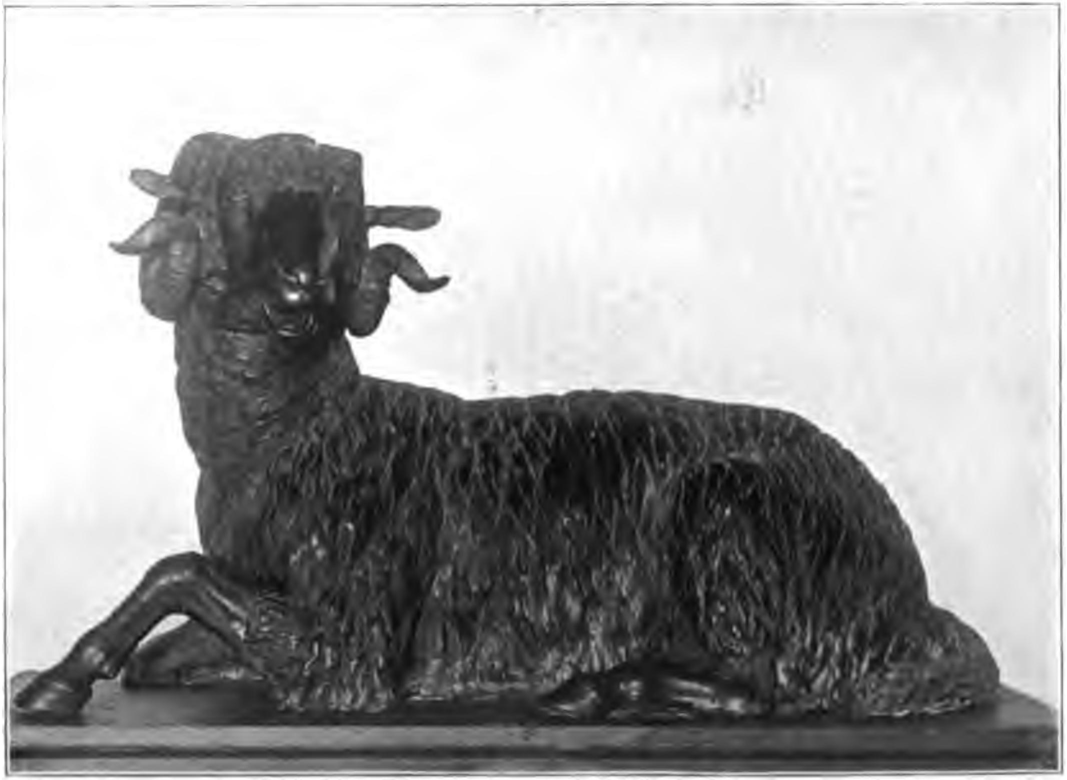

4. Bronze Ram, in the Palermo Museum.

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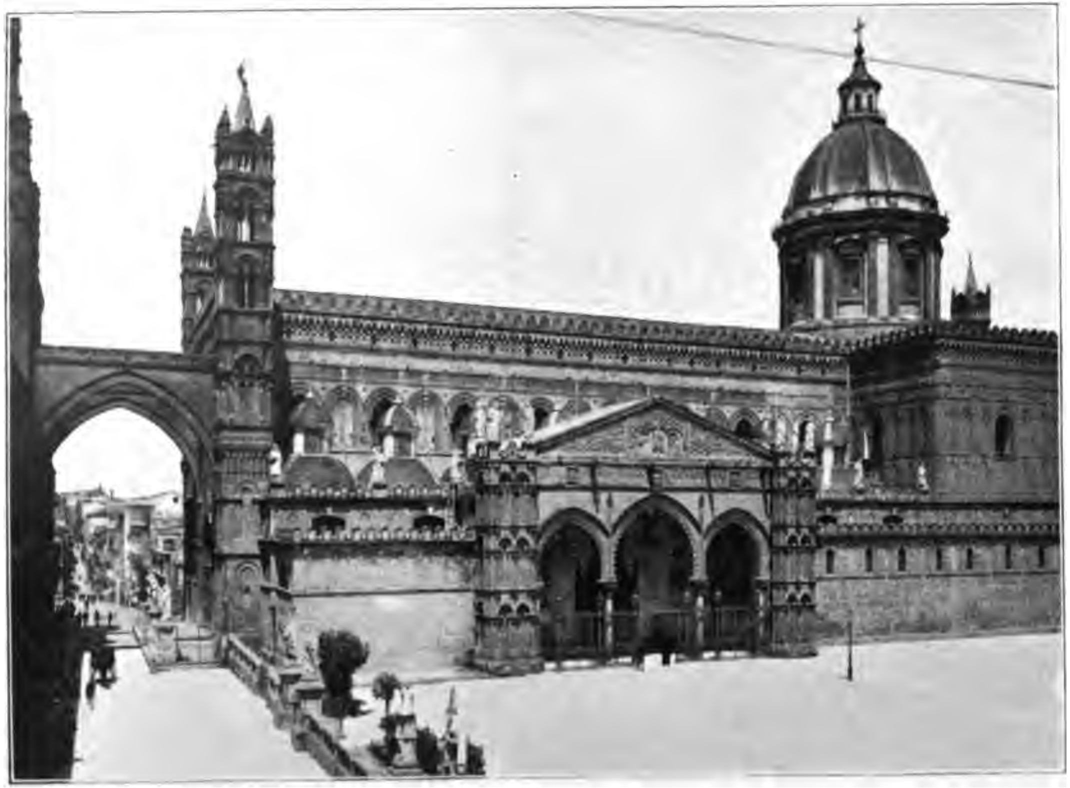

5. Palermo Cathedral.

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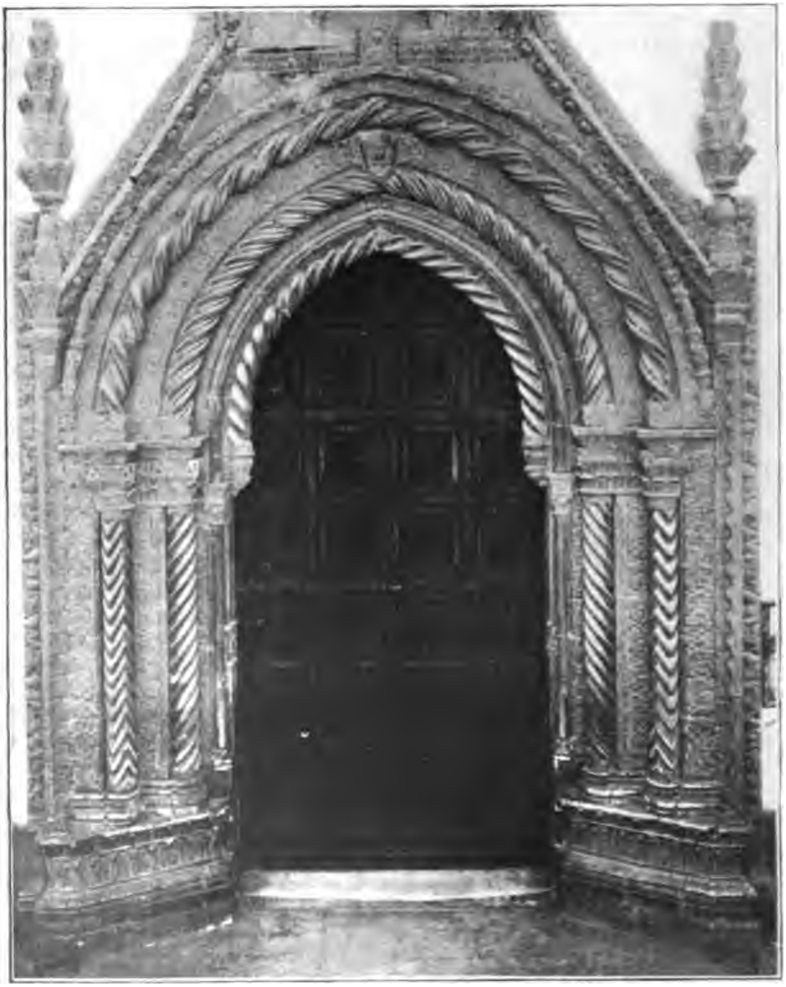

6. South Door of the Palermo Cathedral.

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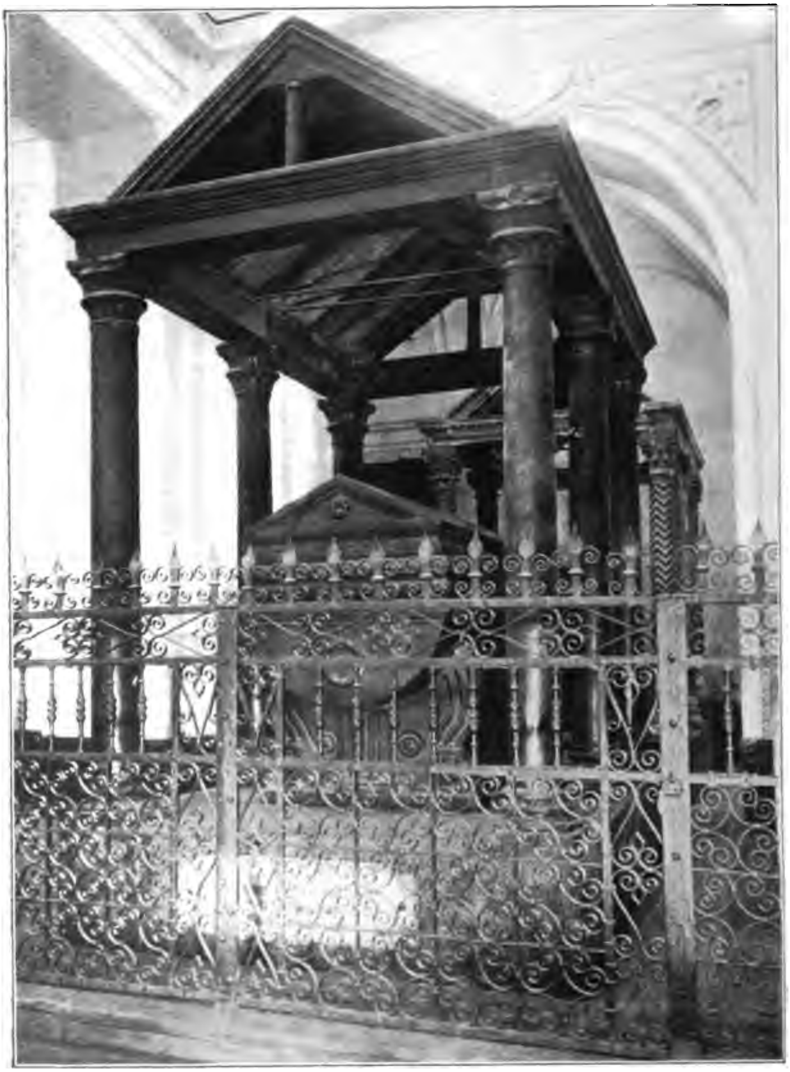

7. Tomb of King Henry VI, Palermo.

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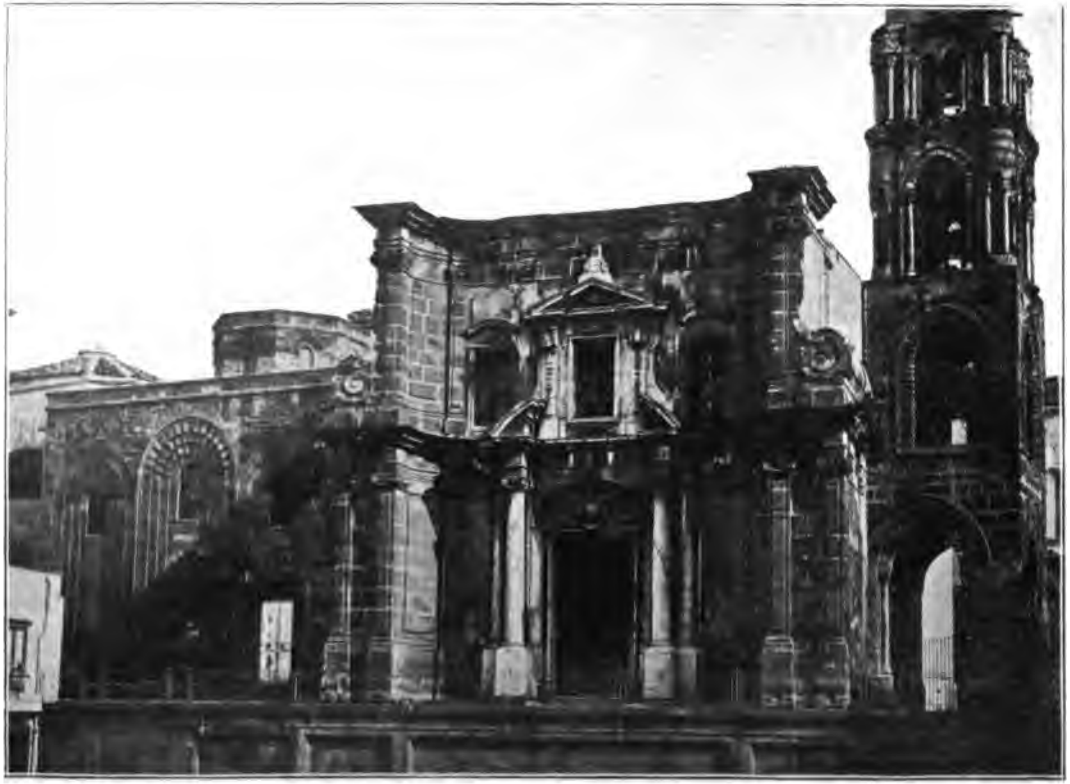


8. Martorana Church and Tower, Palermo

Photograph No. 4.—In the small, but good, Museum of Palermo there is such a surprisingly fine piece of bronze found at Syracuse in the eleventh century that I felt I must send its picture. It is not known where or when it was made, the director of the museum informing me that it possibly was of Greek origin, or it may have come from Constantinople. It is an "ideally life-like ram." It is the finest animal piece of metal or stone I have ever seen. There were two, but the other was melted into a cannon at the time of the Revolution of 1848.

Photograph No. 5 is of the Cathedral of Palermo. The building to the immediate left is the Episcopal Palace, upon which is a beautiful bell-tower dating back to the twelfth century. As will be noticed, the cathedral and palace are connected by two arches, without any apparent reason for their existence. The west façade, erected 1300 to 1359, is not ill affected by them. An unusual projecting line of stone on the façade gives a suggestion of the outline of the building behind, and relieves a plainness which otherwise would be severe. I have never noticed a similar decoration. The cathedral itself was erected by Archbishop Walter, of England, between 1169 and 1185; but the beautiful south portico was enriched by the gable in 1450. The ugly dome was added in 1781 to 1801. On the east, the building has been restored in black and white stone ornamentation similar to the original finish.

Photograph No. 6 shows the beautiful south door of the cathedral, dating back to 1425.

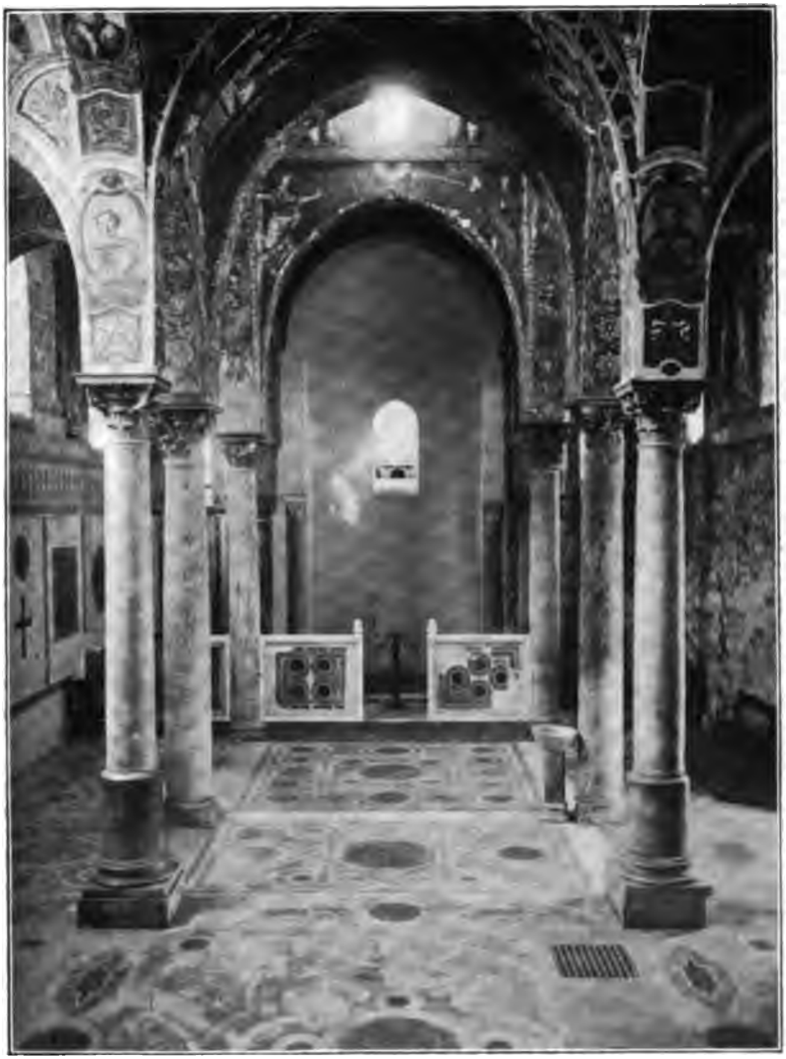
Photograph No. 7 is of the tomb of King Henry VI, Friedrich Barbarossa's son, who died 1197. Both the sarcophagus and the canopy are of red porphyry. When the hardness of that stone is considered, the tomb is very noticeable. With this tomb are three others, all out of porphyry.

The edifice of photograph No. 8 is now the Government Museum of Martorana, and to me was in many ways one of the most interesting features of Palermo. To the left is a portion of the original church which was erected in 1143, originally "quadrangular with three apses and a dome borne by four columns in the Byzantine style," and was adorned inside and out with mosaic, probably by Greek artists. The centre building was erected in 1684. The tower is beautiful, little justice being done it by the photograph. The sections above the second are each reduced in size from the one below it. Two sections are now missing. In the same enclosure, there is a smaller church, San Cataido, begun in 1161. There are three domes indicating the Byzantine style of architecture; and, on "the outside, the old Arabian battlemented frieze is visible."

Photograph No. 9 shows the interior. The plain portion seen at the back is only a temporary partition, erected while restorations are progressing. The columns before alluded to are here seen; and on the back floor is distinctly marked a portion of the original mosaic, while in the immediate foreground is seen the large mosaic of the fifteenth century, which clearly marks the dividing line between the two churches. The screen is of the older date.

Photograph No. 10 shows a portion of the wonderful mosaic on the ceiling, dating back to about 1150. It has been well restored.

On a slight eminence, fronting what could be made a pretty feature of the city, but now nothing but a dusty, unkept, open space, bordered with trees, at this time bare of leaves, stands the large palace, severe, but nevertheless imposing, with a fine tower to the right, serving the purpose of a gateway out of the city. The interior, plain, but respectable and clean, with a large open courtyard in the centre, surrounded by wide, open arcade passageways, supported on columns and reached by stone steps. At another time some features of the palace might be attended to, but the feature shown by photograph No. 11 is certainly the great point of interest: the interior of the Cappella Palatina, built in 1132, in Arabic-Norman style. "A perfect gem of medieval art, perhaps the most beautiful palace-chapel in the world." Outside, all looked bright, and one is little prepared for the sudden change to the subdued, impressive light experienced upon crossing the threshold. The interior is dark, but not gloomy, and the wandering rays of sunlight penetrating through the windows in the dome and the "wondrous magic of the general effect" dissipate thoughts of the outside world, and one stops and wonders, impressed. And the lone priest in rich vestments saying the mass lessened not the charm of the place. The photograph tells the story better than I can, yet a few data may not be out of place with the story. Nave and aisles are one hundred and eight feet long and forty-two feet wide. "The Saracenic pointed arches are borne by ten columns of granite and cipollino sixteen feet in height. The dome is seventy-five feet in height, pierced by eight



9. Interior of the Martorana Church, Palermo.

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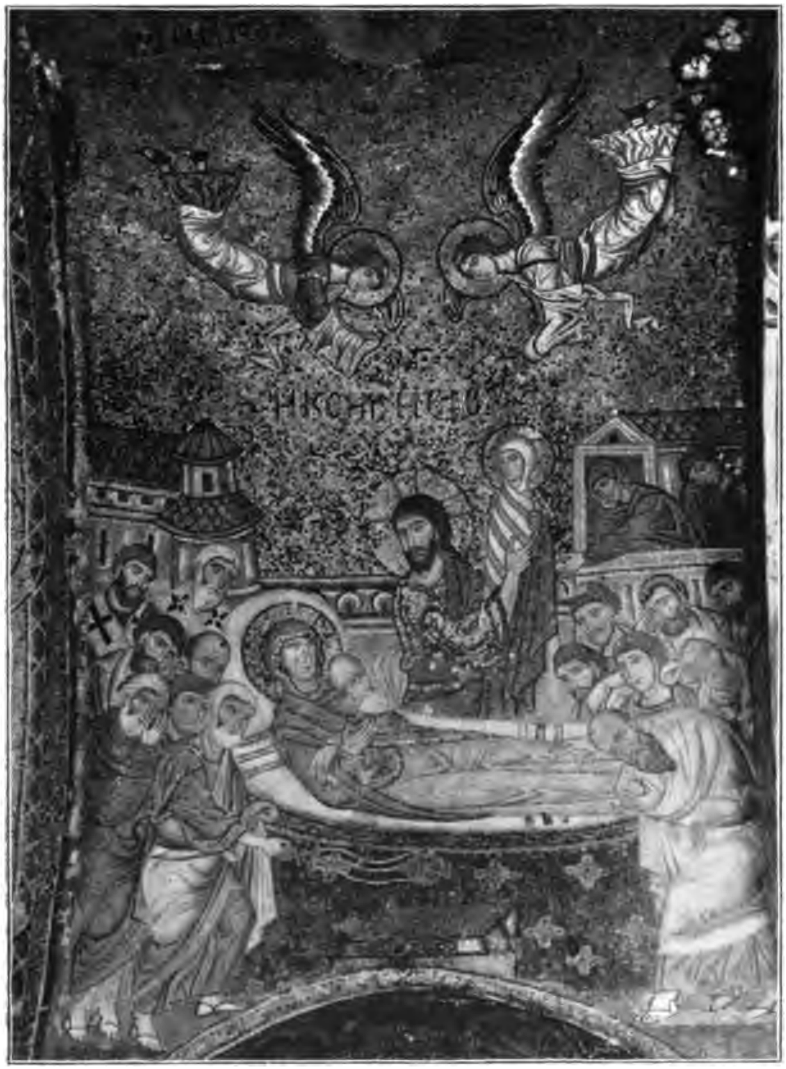

10. Ceiling Mosaic of the Martorana Church, Palermo.
(Death of the Virgin.)

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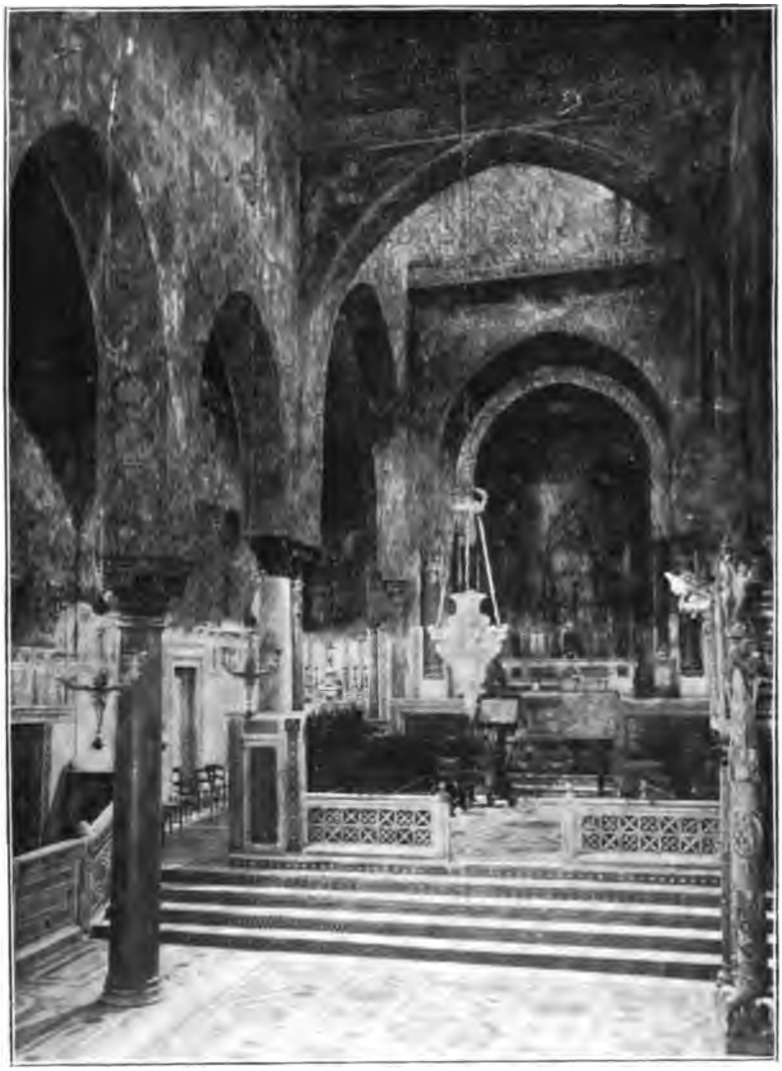

11. Interior of the Cappella Palatina, Palermo.

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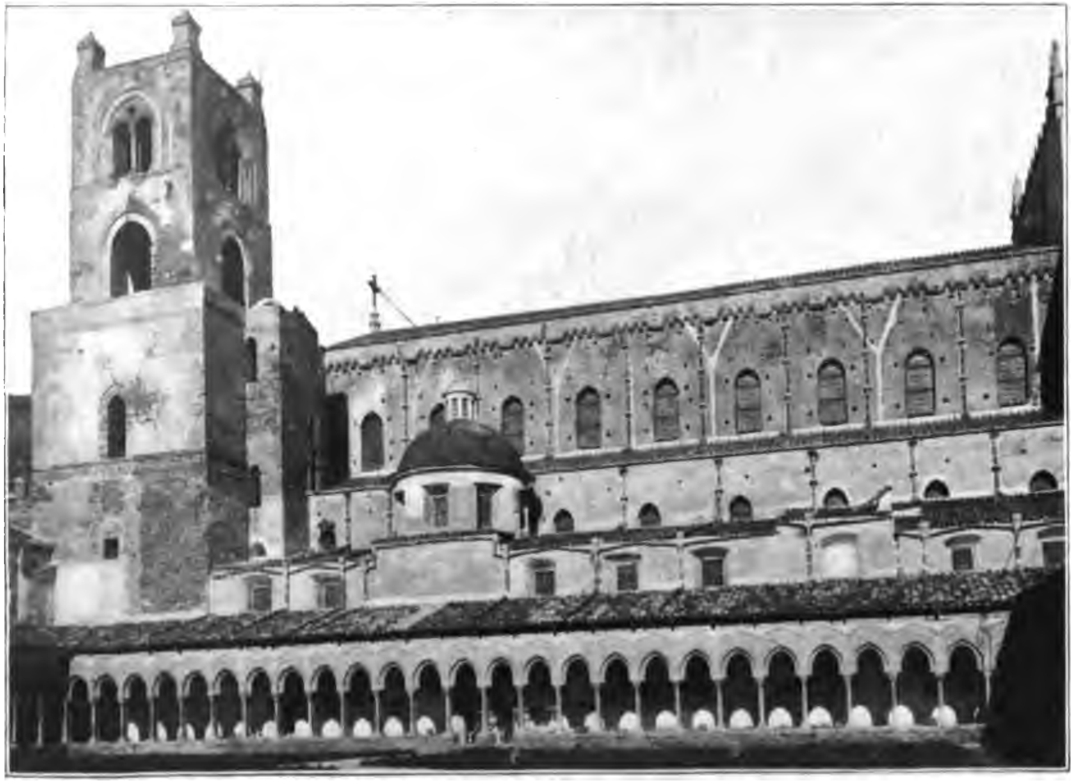

12. Monreale Cathedral, from the Cloisters.

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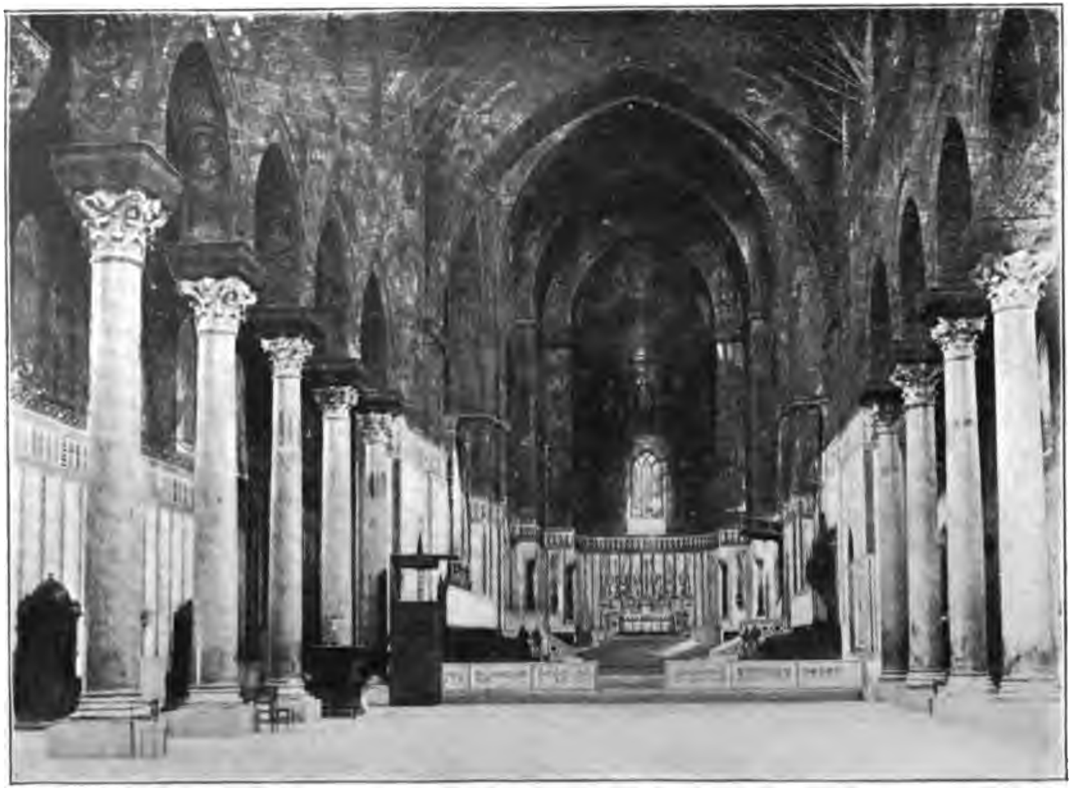

13. Interior of the Monreale Cathedral, Palermo.

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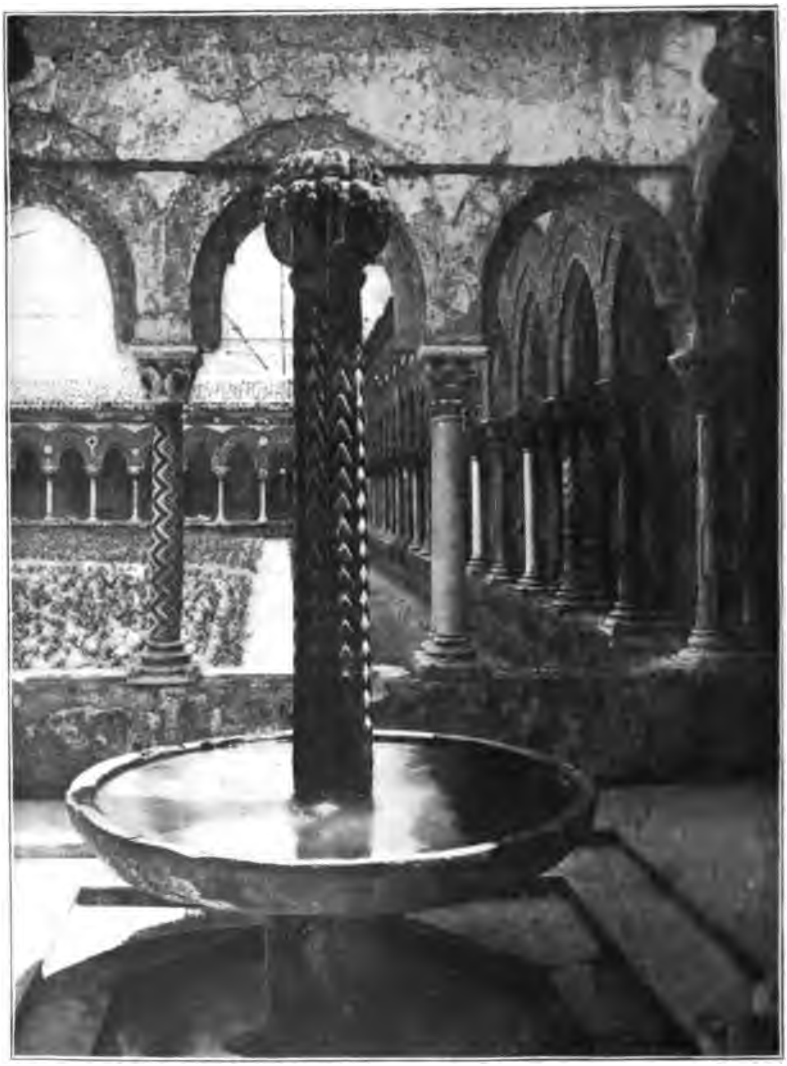

14. Cloisters of the Benedictine Monastery, Monreale, Palermo.

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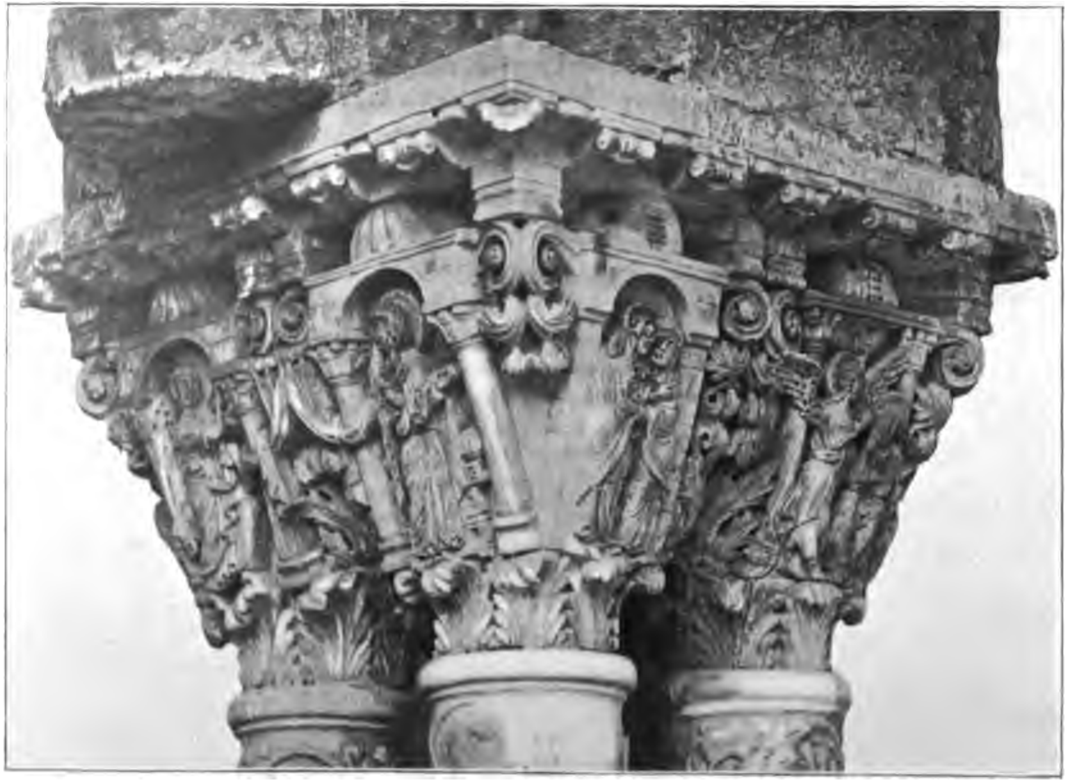

15. Capital of a Column in the Monreale Cloisters, Palermo.

narrow windows bearing Greek and Latin inscriptions. The beautiful wooden roof of the nave is also adorned with a cufic inscription, and connected with the walls by a stalactite vault." "The pulpit and marble candelabrum are fourteen and one-half feet high in Norman work of the twelfth century."

Among the mountains four and one-half miles back of Palermo, on a hill rising out of acres and acres of orange and lemon trees, while in the distance the blue Mediterranean disappears into uncertainty, altogether a charming spot, if suffering humanity did not exist in such numbers, is the little town of Mon-reale, 980 feet above the sea. We went to see the cathedral, and photograph No. 12 will tell what it looks like. It is in the shape of a Latin cross 334 feet long, 131 feet wide, and was erected 1174 to 1189. "The edifice was seriously damaged by fire in 1811, but has been well restored."

Photograph No. 13 gives a poor idea of the magnificence of the interior, in which there are over 70,000 square feet of mosaic.

Alongside of this example of man's handiwork is another, the fine cloisters of the Benedictine Monastery, as is seen in photograph No. 14. In the cloisters there are 216 pairs of columns erected about 1200. Many are inlaid with mosaic, but, alas! much of it has disappeared. In one corner there is a curious fountain, which the photograph shows fairly well.

As every column has a distinct capital, I will let photograph No. 15 convey what it will, knowing well how little it will be, compared with the reality.

With this unsatisfactory ending, I close this long letter, commenced with the best of intentions, but, as page after page has been filled, I have feared for the patience of my good friends. In closing, I realize how poor my words are to tell the story as it should be told, and how disappointing; but they will tell one thing, that, absent though I be, my thoughts are with you.

Sincerely yours,

JOHN T. MORRIS.

To STEWART CULIN, ESQ., Secretary, Numismatic and Antiquarian Society, Philadelphia.

March 22d, 1900.

STEWART CULIN, ESQ., Secretary, Numismatic and Antiquarian Society.

MY DEAR SIR:

In my previous letter I made mention of a few of the things which interested me in Palermo, and which I thought might be of interest to members of our Society.

From Palermo there are practically three railroads, one going east along the north shore of Sicily; the second going west, and then turning south, and again turning north, following the coast line as far as Trapani. The third one, starting from the first about thirty miles from Palermo, turns south to Girgenti; from which point travelers take a middle course to Catania, the second city of Sicily, situated about the middle of the east coast; or else take a very tedious railway journey along the south coast, turning north when the east coast is reached, as far as Catania where the railroads join. On that part of the island west of Palermo and Girgenti, there are many places of interest to the antiquarian and archæologist; but time did not admit of our visiting them, nor any town but Girgenti on the south coast. Consequently I confine this letter to a few remarks about the photographs I now have the pleasure of sending.

From Palermo to Girgenti the distance is eighty-four miles, requiring about five hours to traverse by railroad. The scenery passed through is interesting to a high degree; the mountains are of a cold, gray limestone toned by time, and with enough vegetation to take away their bleak appearance, and give pleasure to travelers fond of the picturesque. In the valleys, a better prospect is seen, where every opportunity is taken to make use of fertile land with groves of orange and lemon trees, grape vines, and luxuriant crops of vegetables that were pushing into growth as we passed. After crossing the water-shed from the Tyrrhenian Sea, and descending towards the African Sea, we saw the orange and lemon trees become scarcer, and their place taken by almond trees, which were then, January 30th, bursting into full bloom, a charming sight. We were also in the midst of the great sulphur district, this part of the country producing the largest portion of the total product.

From the railroad station for Girgenti a good road ascends for about two miles, with a grade of 800 feet. When the summit

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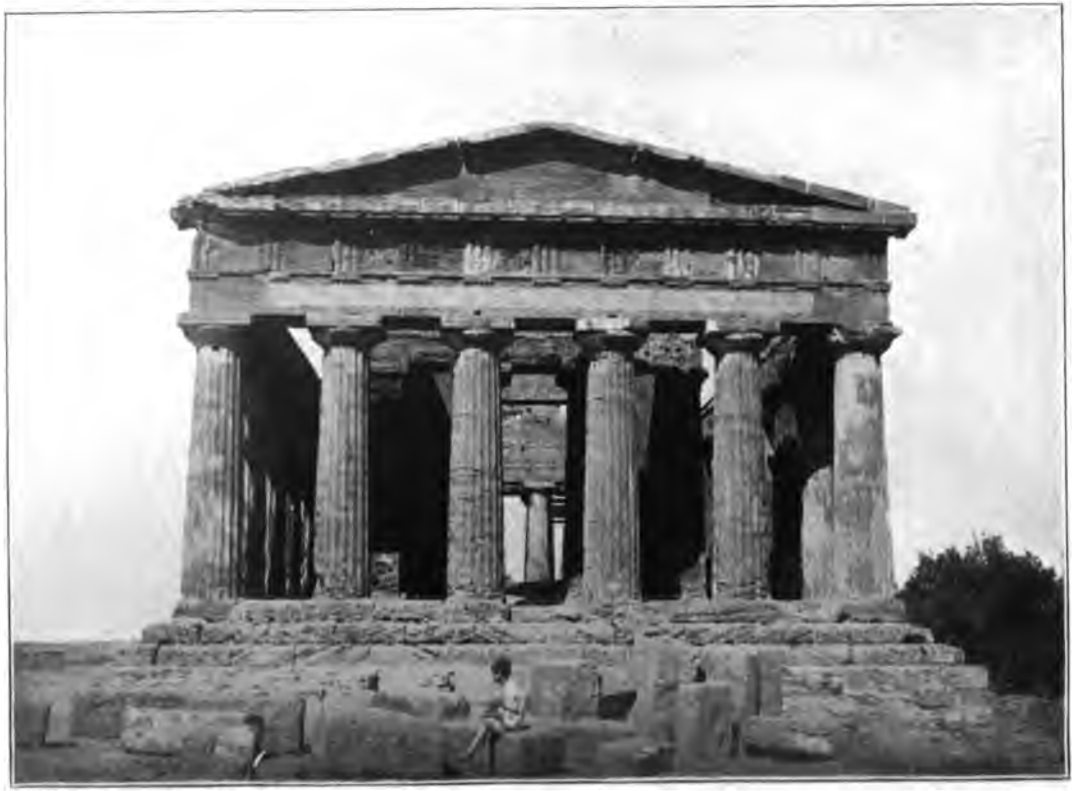

16. Temple of Concord, Girgenti.

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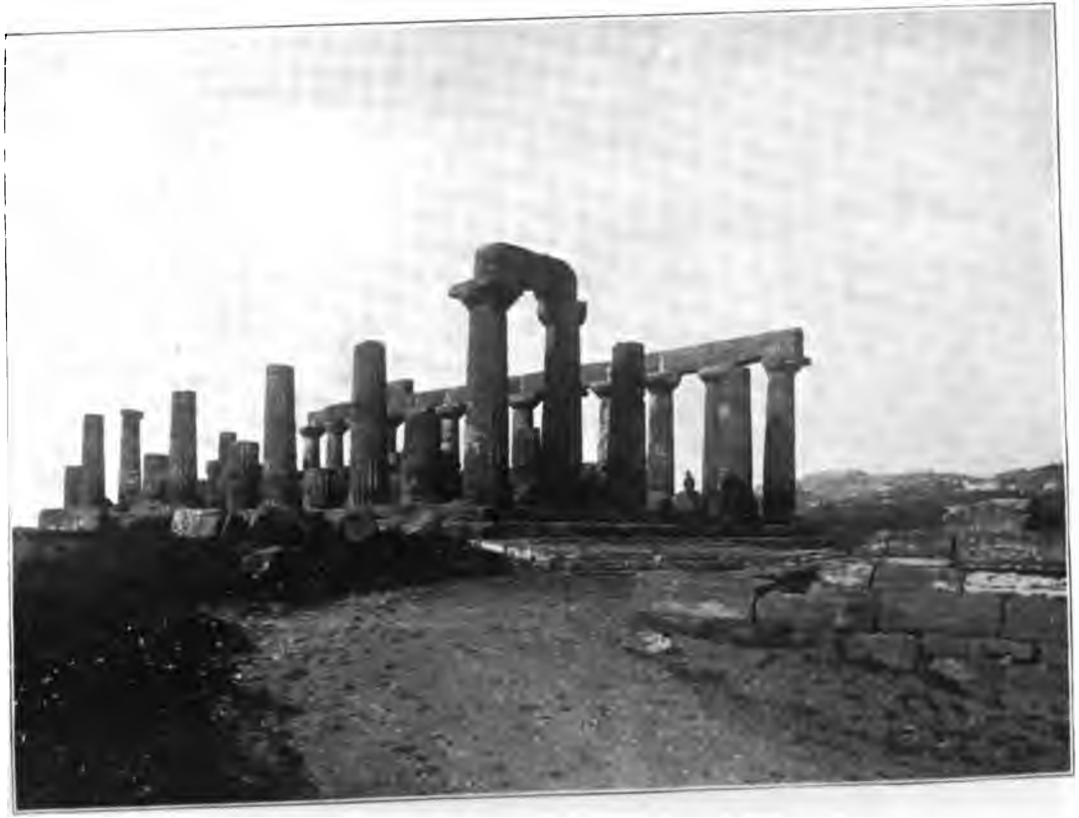

17. Temple of Juno Lacinia, Girgenti.

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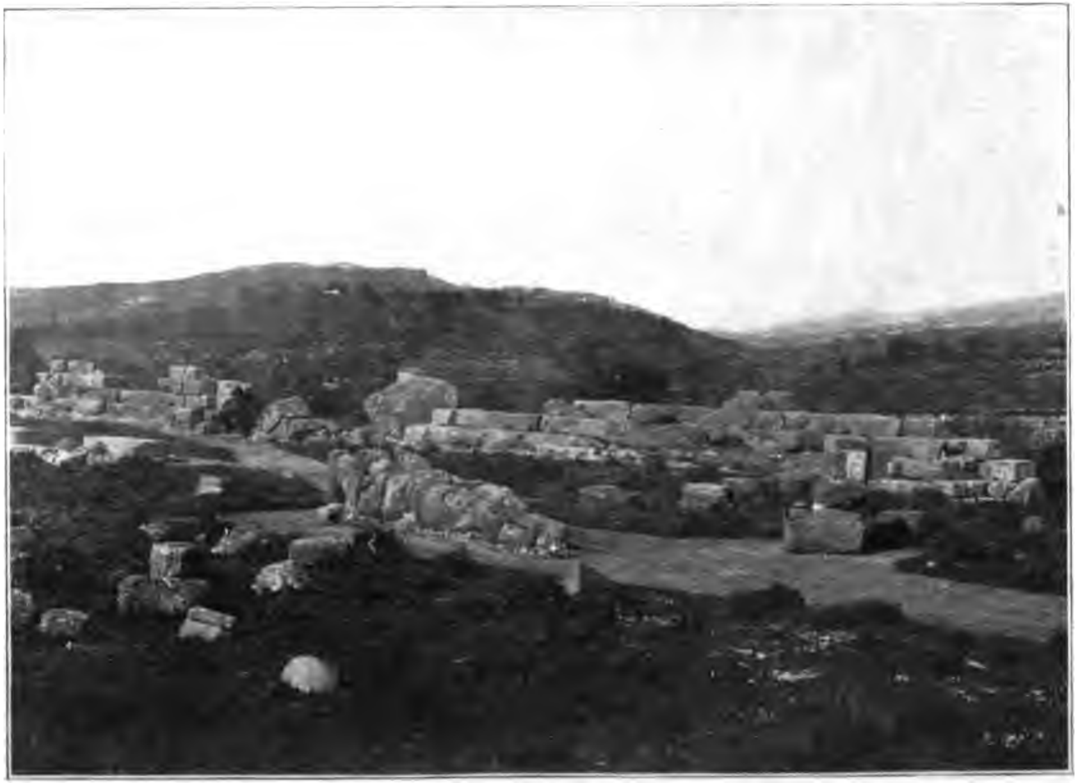

18. Temple of Zeus, Girgenti.

has been passed, to the right is seen picturesquely situated the town of Girgenti, built, as most towns in Sicily are, on top of a hill, causing the houses to appear like stone terraces, one rising above another, dull gray in color; and one misses the bright appearance of the stucco-coated houses of Italy. Girgenti was formerly the ancient city of Acragas, founded 582 B. C., "the most beautiful city of mortals," according to Pindar. The road now descended as rapidly as it had ascended, and about a mile beyond the town our hotel was seen pleasantly situated on a prominence.

After luncheon we started out to visit the ruins, which were found beautiful and more imposing than we expected, being of a deep, rich, reddish brown color. The ancient town formerly covered a large area, surrounded by a wall following the irregular contour of the land; and, it is said, had 800,000 inhabitants. On the highest elevation, 390 feet above the sea, are the ruins of the temple of Juno Lavinia, which was about 134 feet long and 64 feet wide, having 34 columns, 21 feet high and 4 feet in diameter. In line, but below, is the Temple of Concord, 138 feet long, 64½ feet wide, having 34 columns 22½ feet high, 4½ feet in diameter, which is seen in the second picture. Continuing the descent, we come to the ruins of the Temple of Hercules, which, although much larger, are of less interest to visit, since they are in a bad state of preservation. Still descending, the great ruins of the Temple of Zeus are reached, 360 feet long, 182 feet wide, having 34 columns, 55 feet high, 14¾ feet in diameter. Beyond, there are two other temples, so much in ruins that it is unnecessary to speak of them at this time. The beauty of the situation of the first two temples is beyond any power of description, standing, as they do, on the brow of a precipitous hill, forming part of the boundary wall of the ancient city.

In the Temple of Concord, high above the surrounding country, the eye takes in a level fertile valley extending to the blue Mediterranean about five miles away; and when one turns his back to the sea, he sees a charming undulating valley filled with fruit trees that have for a background a precipitous cliff of several hundred feet in height, from which the stone was taken to build these fine temples. As one looks at the Temple of Concord, one cannot fail to be impressed with the similarity between it and the magnificent Temple to Neptune at Paestum. But why compare? Both are magnificently grand. My preference, however,

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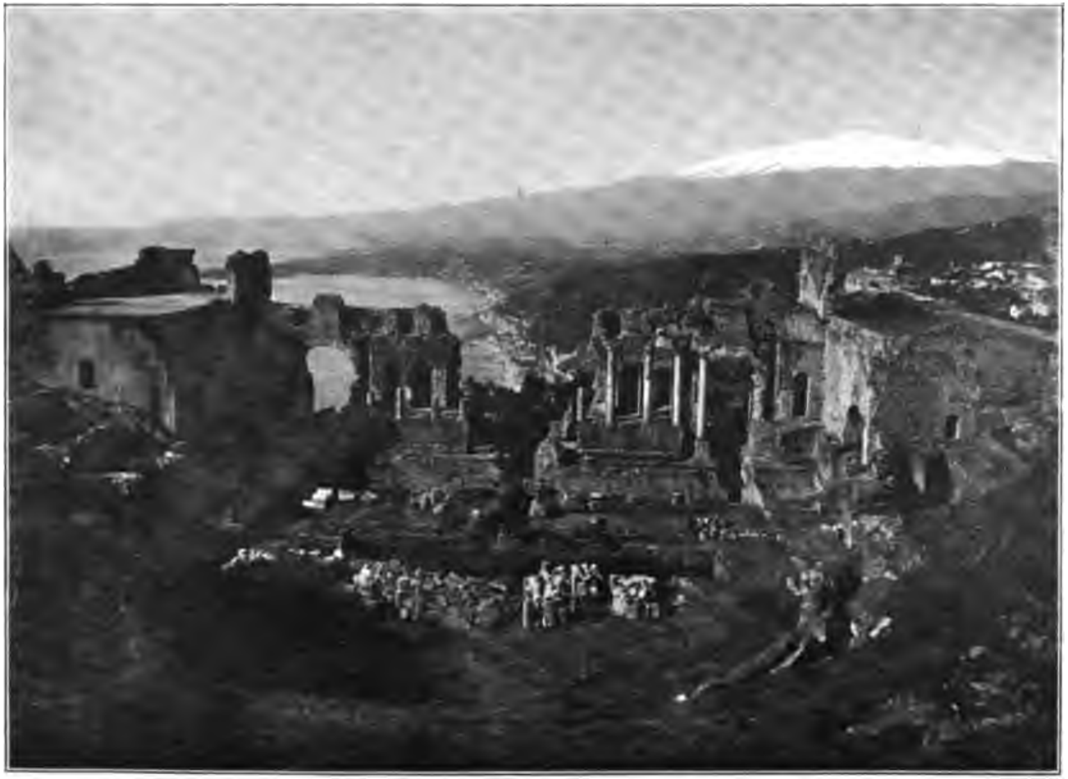
is for the Temple of Concord at Girgenti, which has stood so commandingly for 2,500 years, and now, while in its decadence, is in such harmony with its surroundings, the verdure of the earth, the blue of the sky, and the background of the ever-changing light of the distant sea.

The Temple of Zeus was never finished, and is now in a totally collapsed condition, owing to the effect of time and man's destructive propensities. Along the walls, and forming part of them, were colossal statues of Atlantes; one of which, in the middle of the temple, has been reconstructed, and is shown in the photograph. It measures twenty-five feet in length. It is hard for one who has not seen these columns, fourteen feet in diameter, to realize their size, with flutings broad enough for a man to stand in each, or to realize the size of the immense capitals of single pieces of stone yet in existence.

I will allude to only one other of our stopping places, Taormina. The photograph I send you tells of the beauty of the situation of the ruined Greek theatre better than I can. The white-capped mountain seen in the distance is Ætna, 10,000 feet above the sea. At the water's edge, 400 feet below, is a little village and railroad station, from which we commenced the steep ascent in the town. Taormina, with now only 3,000 inhabitants, was formerly a large city enclosed within a wall, about five miles in circumference, and its importance caused it to suffer from the effects of war from 400 B. C. to 1849 A. D. Carthaginians, Greeks, Romans, Moors, Normans, French, and Italians, each in turn aided in the destruction of the city; so that the theatre shown in the picture is the only thing of any particular interest now remaining of its greatness. But the architect acted well his part when he selected the projecting spur of rock just wide enough for the theatre. The beauty of the view is imperfectly told by the photograph, and hints not of the charming view in the opposite direction, where the Calabrian Mountains of Italy form a background to the nearer hills, and the curving, rocky shore of the Mediterranean stretches to the distant horizon. The theatre is of Greek origin and of very considerable size, its greatest diameter being 357 feet. Unfortunately the space devoted to seats is particularly in ruins, but the picturesque stage screen is a fitting frame for the snow-capped Ætna. The acoustic properties of the theatre are remarkable; for a person speaking in a low tone



19. The Greek Theatre, Taormina.

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of voice on the stage is easily heard by another on the topmost seat, or the reverse.

I have sent these views hoping that they may prove of interest, as the ruins shown may not be familiar to all of our members. With kind regards and many regrets that I have not been able to be with you this winter, I remain,

Very sincerely,

JOHN T. MORRIS.

BLACK PATINA ON JAPANESE IRON SWORD-GUARDS.

BY EDWARD GILBERTSON, ILFRACOMBE, ENGLAND.

(Read October 4th, 1900.)

A private letter from Mr. Gilbertson to Mr. Lyman, dated 19th of July, 1898, says: "I am sorry I cannot give Mr. —— any useful information about the black patina on the iron *tsubas* [sword-guards], for I fear he will not find the account of it in Professor Church's introduction in the Burlington catalogue of much practical value. I wrote to Mr. Gowland to see whether he or Professor Roberts Austen could tell me something of the process, but have not yet heard from him. One or the other will, I hope, be able to give it to me, for the moderns carry it out with great perfection, Natsuo's patina being remarkably fine and velvety.

"I have found that by removing the rust from old *tsubas* with a solution of caustic potash, washing them thoroughly and then dressing them with linseed oil, I brought up the black surface admirably; and even when I merely coated them with vaseline and got rid of the rust partially only, nearly the same result was obtained, and if there is any other metal used on the *tsuba* except iron, I have generally preferred that process. It was Mr. Church who suggested to me the use of the caustic potash process, which he employs with very great success on his *tsubas*. I would have asked him about the Japanese process, but he is away."

Mr. Gilbertson's letter of the 25th of July, 1898, says: "I am now able to give you the process for producing the velvety, black patina on the iron *tsubas*. The surface of the iron is carefully prepared and freed from dirt and oily matter by boiling in a lye prepared by lixiviating woodashes. The *tsuba* is then slightly rusted by heating it over a *hibachi* [brazier], and rubbing it lightly with a cloth or rag wetted with a solution of iron in plum vinegar in which rust is suspended. This part of the process is the same as that employed in producing the ordinary brown rusted surface, but it is not carried so far. After this slight rusting, the *tsuba* is boiled in a decoction of pomegranate rind, when a black tannate, or perhaps some gallate of iron is formed. The *tsubas* are then washed and dried, and may be burnished.

"That is very different from the description given in the Burlington catalogue, and I hope Mr. —— will find it to answer. In fact, it seems to me a very useful process that could be applied with great advantage to ornamental small iron work, of which too little use is made. They used to get a capital surface on the Berlin iron castings used for jewelry and ornaments between fifty and sixty years ago; but they kept the matter secret, and the imitations were covered with a sort of varnish."

FOUR TURKISH COINS.

BY EDWARD GILBERTSON, ILFRACOMBE, ENGLAND.

(Read October 4th, 1900.)

In a private letter to Mr. Lyman, dated the 11th of May, 1900, Mr. Gilbertson says: "The four Turkish coins I now enclose are neither valuable nor rare, although rarely met with nowadays; and I thought they might interest some of your numismatic colleagues who may not know them.

"The *asper* is curious on account of its small current value, only one-twelfth of a farthing; but so late as the early part of the present century, it sufficed to purchase a day's food for a vegetable-eating people like the Turks. When, in 1858, our ambassador, Sir H. Bulwer, was negotiating the commercial treaty with Turkey, I found the customs duties calculated in *aspers.* So a duty of 100 *aspers* per quintal, or per piece, sounded formidable; but after all, it was only a trifle more than two pence. I had not much difficulty in persuading them to adopt the piastre as the unit, with its divisions of forty paras, although they boggled at it, wanting the duties to be fixed in paras (or quarter-farthings).

"The large half-piastre was the result of the war with Russia in the first quarter of the present century, the cost of which Mahmud defrayed by debasing the coinage. This debased coinage has ever since been a glorious field of plunder for the masters of the mint. The standard was to be one-third silver; but they read that as if it were foreign silver coin, and took no note of the alloy already in the coin, and treated it as pure silver. Under Abdul Aziz, when our commission called in the depreciated paper money and issued a good coinage, I endeavored to abolish this base money, but only succeeded partially, for it still circulated largely, especially in the interior.

"The gold *roobié* was issued as a five-piastre piece, and was largely used in Egypt; but this is a Constantinople coin.

"The *asper* you will see has a hole in it; and I bought it, with other coins, from the cap of a girl in the Lebanon. They were fastened to it as the beginning of her dowry, the coins being usually attached to the silk braids that hang from the women's heads at the back."

COIN CABINET.

BY EDWARD GILBERTSON, ILFRACOMBE, ENGLAND.

(Read October 4th, 1900.)

In the letter of May 11th, Mr. Gilbertson adds: "I wonder whether any of your friends who collect coins would care to know my arrangement for that purpose, which I have found very useful in many ways.

"I had a number of Greek and Roman coins in fine preservation, and more modern medals and modern coins fresh from the mint, many of the latter coming direct from the mints, when I was making arrangements for the new Turkish coinage. Many of the ancient silver and gold coins are of high standard and soft in consequence, and therefore easily worn away. As to medals and modern coins, when they are fresh from the coining press, they have the 'mint bloom' on them, a surface that gives the unpolished parts, in relief, their true artistic value against the polished flat ground. This peculiar texture is easily destroyed by rubbing, or careless handling with a hot hand. I had a friend, ——— ———, a collector, who had a trick of rubbing a coin between his finger and thumb, to the ruin of some of my specimens. So, to guard against it, I have most of my coins between two pieces of glass, and have given away my cabinet with the customary circular cells.

"The pieces of glass are seven inches by five inches, and pieces of mounting-board, of various thicknesses, but of that size, are placed between the two pieces of glass. With a punch, or by means of gouges, circular holes are cut in the mounting-board large enough to admit the coin, and the surface being white, I write beneath it the name, date, etc., of the coin. When the frame is filled, I fasten the two plates of glass together by their edges, with a strip of paper and gum, turning the paper over the edge (or front) of the glass about three-sixteenths of an inch. At the top of the mounting-board I put the number of the frame; and on the edge, I put the same number. I then pack them in a cabinet like books, the cabinet having a shelf, with a drawer below for coins awaiting mounting. A small cabinet thus holds above 800 coins. You can examine both sides of the coin, and if you require a closer examination, or wish to substitute another coin, a penknife run through the paper on three edges of the frame easily gives access to it, and the frame is put together with paper and gum in about five minutes. You can only partially classify the coins; but I find that no inconvenience, as I catalogue the contents of each frame fully before closing it up.

"[A] figure which appears in my catalogue in the beginning of the description of each frame [shows, at the top, the number of the frame, and, below, the relative position of the coins by circles with consecutive numbers inside]. The description runs: 1. The size, metal, weight, and, in fact, the usual full description of the coin. Then comes 2, and so on. My index at the end of the catalogue is in two parts, one geographical, the other personal names. Thus, you find under Pella (Macedonia), 13-4. meaning frame 13, number 4. And under Alexander III (Macedon), 13-4, being the reference to the same frame and coin. Having found in the index the coin you want, you easily find the frame in the cabinet, by the number on its edge. In this way, I can mix many varieties of coin in the same frame, as I acquire them, without any practical inconvenience; although, of course, as far as possible, I group together coins of the same king or nation.

"I wish I could hunt over my duplicates, to see if there are any of interest left, but I have given away to various institutions most of them, as well as handing to the British Museum or to Cambridge any I had that were lacking in their collections; for mine will, of course, be scattered, while those at the museums are always accessible, which is not always the case with private collections. My mode of dealing with my coins has saved me from losing any by means of collectors with more enthusiasm than conscience, who sometimes borrow, and forget to return, or even borrow without the formality of asking for the loan."

FALCONRY.

BY CHARLES E. DANA.

(Read November 1st, 1900.)

The following article has been compounded from the *Boke of St. Albans*, publisher and printer unknown, "Seynt Albons," 1486, the last of eight works printed at St. Albans, and the only one in English; much from *The Art and Practice of Hawking*, by F. B. Michel, Methune & Co., London, 1900; and much, needless to say, from that inexhaustible mine, the *Encyclopædia Britannica*, etc.

Hawking was introduced from China and the East. The Lombards carried it to the north of Italy in the latter part of the sixth century, and before the end of the ninth century it was familiar to western Europe and to the Saxons. Henry the Fowler, who became Emperor of Germany in 919, seems to have been so nicknamed on account of his devotion to hawking. The sport, having the charm of novelty, appears soon to have become the chief aim in life with the great upper, and much-bored, class of the Middle Ages. It was probably introduced into England, from the continent, about 850, or a little earlier. The Saxon King, Ethelbert (*d.* 866), wrote to the Archbishop of Mayence for hawks able to take cranes. King Harold (*d.* 1066) is represented in the Bayeux Tapestry with a hawk upon his wrist. The returned Crusaders, especially the Emperor Frederick II (*d.* 1250), gave a fresh start to the sport by the knowledge of oriental falconry that they had acquired.

Severe and arbitrary laws were passed in the interest of hawking, notably in the reign of William the Conqueror, the indefatigable and brutal hunter (*d.* 1087), who cared but little for his people and much for his game; also by Edward III (*d.* 1377), Henry VIII (*d.* 1547), and Elizabeth (*d.* 1603).

In the rude civilization of the fifteenth century, a year's experience of which would have sent most of us to our graves, the mental occupation, as well as the bodily recreation of our ancestors, was mostly confined to hawking and hunting. "Fishing with an angle," came in as a bad third, being too tame a pursuit for men who were no men if not men of war. Mimic war,—war on the beasts of the field and the fowls of the air,—war which could be pursued in times of peace, and which yet required knowledge, patience, fortitude, skill—this had great attractions, and we cannot wonder at the general popularity of these pursuits.

Hawking was a pastime essentially aristocratic from the great expense it entailed in the purchase, breeding, and maintenance of the birds. At first none but persons of rank were allowed to keep hawks. By the Forest Charter of Henry III (*d.* 1272) these oppressive restrictions were relaxed, and "every freeman was privileged to have eyries of hawks, falcons, and eagles, in his own woods, with heronries also."

Hawks were allotted according to rank. Dame Juliana Berners, in the first printed book on hawking, 1486, gives the following list: "An eagle for an emperor, a gerfalcon for a king, a peregrine for an earl, a merlyon for a lady, a goshawk for a yeoman, a sparehawk for a priest, a muskyte for an holiwater clerke"; to which may be added, to the serf or villein was allotted the humble and useless kestrel.

The knight's hawk and hound were cherished by him with a care scarcely inferior to that bestowed on his war horse. Fabulous prices were paid for hawks, and so highly were they esteemed that the ancient statutes forbade any person giving his hawk as part of his ransom.

The invention of the shotgun struck the most deadly blow against hawking. Economy and novelty pleaded in favor of the new sport of shooting. The Civil War (1650) interrupted all peaceful sports. and destroyed a vast number of the best patrons of hawking.

Note that "falcon" among ornithologists means the long-winged hawk. In hawking terms, it means the female of the larger sort of long-winged hawks and especially the female peregrine. Also note that the female hawk or eagle is always a larger and more powerful bird than the male or "tiercel." Also, that the name gyrfalco, gerfalcon, ger, jyr, or jer, means gyrating or circling falcons.

The birds used in the sport are divided into three classes: 1. Long-winged hawks or "falcons." 2. Short-winged hawks. 3. Eagles.

1. Long-winged.—Among these are the peregrine, from the

French *pelerin,* a pilgrim, being a migrating bird. Female, length of body about 18 inches; male, 16 inches. Michel says: "Speaking generally, the peregrine may be regarded as the most perfect type of combined strength, speed, and destructive power in birds."

Saker: female, 25 inches; male, "more than 18½ inches." The tiercel of the saker is more properly called a "sakeret" or "sackeret."

Lanner: female, 18 inches; male or "lanneret," 16½ inches. Both these are "desert hawks." Among the Arabs a fine and well-trained lanner fetches "a price equivalent to £50 or £60" (Michel).

Hobby: female, 13 to 13½ inches; male, 11 to 12 inches.

Merlin: female, 11½ to 12 inches; male, 10½ to 11 inches.

Kestrel: female, 13 inches; male, 12 inches. Of no practical use as it refuses all wild quarry, but "graceful as the proudest peregrine or the most majestic ger" (Michel).

2. SHORT-WINGED HAWKS.—These do not swoop down on their prey, but follow behind, "trussing or binding" it. Their flight lacks the grandeur of the long-winged, but as pot-hunters they are quite as good. The same cannot be said of their temper, which is bad.

Goshawk: female, 22 to 24 inches; male, 19½ to 21½ inches.

Sparrow hawk: female, 14 to 16 inches; male, 11½ to 12½ inches.

3. EAGLES.—They were never much used in Europe, and are so very ill-tempered that they sometimes attack the men of their own party. Their speed is inferior to that of the hawk, so that they are used more especially for four-footed game.

Golden eagle: Central Asia; female, 35 inches; male, 32 inches.

Imperial eagle: Asia and Southeastern Europe; female, 32 inches; male, 31 inches.

The QUARRY is pretty much all of the feathered tribe, from pheasant and grouse, to snipe and woodcock; from ducks and heron to sparrrow and lark; from rook and crow to jay and blackbird; thrush, partridges, magpies; gazelle, rabbits, hares, rats. The eagle will attack bustards, foxes, antelopes, "and the females will tackle such heavy quarry as wild goat, wolf, and even wild boar" (Michel, p. 37).

TRAINING.—As a rule the full-grown hawks that come into the market, are taken on their autumnal passage by the professional hawk-catchers of Valkenswaard, in North Brabant. A dozen or more hawks are annually required for England, and sometimes a few for France. The person for whom the hawk is intended should take her in charge as soon as possible after she is caught. The first difficulty is to get her to eat, always, of course, from the fist. If she will not stand on the fist she must not be allowed to go to sleep; usually a few hours of fatigue will induce her to do it. A goshawk or a peregrine of an independent nature may resist for a fortnight all efforts to subdue her wild instincts. It will be best then to reduce them with a bit of mild physicking, half a cockle's pill for a peregrine, or one-eighth for a merlin; but never starve them, or make them really thin.

Dame Juliana says: when the young were caught with nets, the first thing was to "enfile" them; that is, to "take a needle and thread and sew up the eyelids," so that they "see never a dele." After a night and a day the threads are cut softly, for fear of breaking the "lyddis of the ighen," then they were fed with some well-washed flesh, but kept awake the next night and day, after which they were supposed to be "reclaimed" or tame. This process of seeling is now quite abandoned and the hawk is merely blinded with the hood.

Next comes teaching "her" to jump from the perch to the fist for choice morsels of meat.

MANNING includes habituating her to the company not only of man, but also to that of dogs, horses, and all other animals and things which she is at all likely to meet in her artificial existence of the future. She must be gradually introduced into society, and like a young lady of fashion, her début will probably be made at night-time. When well accustomed to meeting people by night she may be brought out by daylight. A horse or a dog of unemotional temperament may be present when my lady is unhooded. If frightened she must be soothed by stroking her on the breast with the forefinger or a stick. If she resents your conciliatory efforts by removing a portion of the caressing finger you must in nowise show undue resentment thereat, as the sacred "she" might never pardon you.

Next comes the lure, which "is as important to the falconer as a hook to the fisherman or a bridle to the rider." Food is fastened to it, and the hawk taught to look for her meals upon the lure, so that she flies to it whenever she sees it. The next step is to get her to take her quarry, and for long she may "refuse" it. Care must be taken to prevent the hawk's bolting with the quarry. When a bagged quarry is used, attach a light string to it. Be most cautious in approaching the hawk on her quarry. Approach obliquely, rather than in a straight line; or even crawl. When nearing her, "avoid above all things staring at her, which hawks greatly dislike."

In the field, say on a moor (from Michel), "as soon as there is a steady point (you are, of course, on open ground), unhood and throw off your hawk, which has already learned to wait on (soaring, circling on the watch for prey). As long as she is moving upwards, making each circle a little higher than the last standstill, let her go on, or, if the point is far off, walk steadily toward it. The grouse will have seen the hawk, and be in no hurry to move while she is mounting. . . . They also have been waiting till the hawk's head was turned away; and now, as she is near the outer part of her circle, which is furthest from the quarry, up they get, and off they go, whizzing along the top of the heather. At this stage of the proceedings the modern falconer does, for once, find the use of his voice. He shouts loudly to call the hawk's attention, and to cheer her on: 'Hey! gar! gar! gar!' or 'hoo! ha! ha!' are the old-fashioned cries for encouraging a falcon to stoop from her pitch. . . . There can be no doubt that a shout of some kind, or a blast on the horn . . . has an inspiring effect on hawks" (Michel, p. 122). "No one knows how the speed and force of a falcon's stoop is gained. All we can say is that it is the fastest movement made by any living thing in the world. It is not flying, and it is not falling, but a combination of the two, with some other impulse which we do not understand" (Michel, p. 122).

HAWK'S FURNITURE.—*Hood.*—The cap of stiffish leather used to blindfold the hawk while carrying; also while training and feeding. By drawing the straps or "braces" the hood is closed.

Cadge.—This is a most necessary apparatus when the man is the happy possessor of more than one hawk. The orthodox and historic cadge . . . is a circular, square, or oblong frame of wood, three or four feet across, having straps by which it can be suspended from a man's shoulders; which man in classic terms is called a "cadger," but in these days you will not address him by his right name unless you wish him to give you a month's notice. The cadger stands or walks in the middle, with the frame surrounding him. At each corner is a small, jointed leg, which can be hooked up when the cadge is carried, and let down when it is deposited on the ground. The bars which form the body of the frame are cushioned on the top, and on these stand the hawks, hooded, of course, and fastened by their leashes to the frame (Michel, p. 31).

Bells.—"Bells for trained hawks are of the greatest possible use. They betray the whereabouts of the wearer, and save an infinity of time and trouble when she has killed out of sight; and, besides this, they proclaim to every stranger who sees a lost hawk on the wing, that she is private property and not wild. They are practically no impediment to the hawk's flight, except in the case of the very smallest species; and their sound probably augments the terror inspired in the quarry by a stoop that has only just missed its mark. Bells have been used in all countries from time immemorial. The best are now made in India. . . . The European bells are spherical, with a plain, flat shank;" the Indian bell, like two bells that have grown together. "Anciently silver was much used. A good bell . . . should be distinctly heard, on a still day, more than a quarter of a mile, even if but lightly moved" (Michel, p. 41).

Curiously enough, Michel recommends the bells of "Mr. Mollen, at Valkenswaard, in Holland," 1900. Dame Juliana Berners, 1486, says: "Bot ther be now used of Duchelande (Holland) bellys of a towne calde durdright (Dordrecht), and thay be passing goode."

Jesses.—Leather straps fastened around the hawk's legs just below the bewet, for attaching her to the perch. They are about six or eight inches long and are permanent. To these were formerly fastened the *varvels*, small rings of metal, often of silver, with the owner's name engraved theron. They have been given up on account of the great danger of their catching in bushes or other impediment and injuring the hawk.

Lure.—Two wings with the tips turned downward, baited with fresh meat, and attached to a cord a yard or more long. It is cast into the air like a bird, the falconer at the same time giving a peculiar call. It is the invariable companion of the falconer in the field, though never allowed to be seen by the hawk, except when she is required to come to it.

One of the most difficult things in hawking was to obtain easy command of the proper vocabulary, and so, at first start, Dame Juliana instructs us in the "manner to speak of hawks, from the egg." We must not say a young hawk is hatched, but is "disclosed"; they do not breed, but "eyer"; it was want of culture in any falconer to say that hawks were building their nest, they "timbered" it. When the young could first leave their nests they were "bowesses," and when they could fly they were "branchers"; and then was the time to catch and train them.

Next the Dame explains the various diseases to which hawks are liable and the various medicines needful. Some of these are very absurd, and some contradictory. Then comes a variety of terms for every movement and habit, for every limb and part of the body, and for almost every feather in the plumage. In this minute description, the author begins at the feet of the bird and so works upwards, as when "knyghttis been harnesside."

Next we are instructed how important it is to be careful of the manner of guiding the hawk the first time it is ready to "nomme" a partridge; how to reward her by giving her the head and neck; after which on no account is she to fly again till she has "rejoiced,"—*i. e.*, sharpened her beak and shaken her feathers. More medicines follow; among them is how to get rid of "lies" (lice). "Take a piece of rough blanket and hold it to the fire till it is quite hot; wrap the hawk therein; and without hurting hold her 'softly and stylly' in your hands, and all the vermin will creep into the cloth." A happy thought, this.

The "gesse," or strip of leather by which the hawk is held when carrying her on the hand, is next described, together with the creance or long line. More medicines still, and then how to treat hawks when "in mew," or moulting, a matter of great importance. To promote "mewing" give the flesh of a kid, a young swan, and especially rat's flesh; stewed adders are strongly recommended, or chickens which have been fed upon wheat soaked in broth of vipers.

Gout seems a common disease in various parts of the hawk's body, which may be known by swelling and "ungladness"; also rheum and fever and blains and agrum, which last is cured by a red-hot silver needle thrust into the nostrils. Botches in the jaw should be "kutte with a knyfe." More terms follow for various habits and actions, the last paragraph being upon the variety of bells used for hawks. There should be two, one a "semytoyn" (semi-tone) below the other. The bells of "Melen" (Milan?) were the best; but, says the author, "ther be now used of Duchelande bellys of a towne calde durdright (Dordrecht), and thay be passing goode, sonowre (sonorous) of ryngyng in shilnes (shrillness) and passing well lastyng."

GLOSSARY OF TERMS USED IN FALCONRY.

Arm.—The lower leg.

Bewit or Bewet.—The straps that fasten the bells to the hawk's legs.

Bind.—To seize the quarry in the air and hang to it.

Blocks.—Taking perch on a tree or other place of vantage to watch for a hiding quarry.

Bowse.—To sip water.

Brail.—A thong of soft leather to secure the wing.

Cadge.—See page 113.

Carry.—When she flies away with the quarry at the approach of the falconer.

Cast.—Two hawks that may be used for flying together. When forcibly held down by the hands. To throw up the refuse feathers, bones, and other indigestible matter which remains in her crop after a meal has been digested.

Clutching.—Taking the quarry in her feet.

Deck-Feathers.—The middle two feathers of the tail.

Deplumes.—To strip the feathers of the pelt.

Endue.—To digest.

Enseam.—To bring her digestive organs into good condition.

Eyas.—A hawk that has been brought up from the nest.

Eyry.—A hawk's nest.

Feak.—To wipe her bill.

Flags.—"The federis at the wings next the body."

Footer.—A good footer is a good killer.

Get In.—To go up to the hawk when she has killed her quarry.

Gorge.—Her crop.

Hand.—Her foot.

Hood-shy.—When she resists having her hood put on.

Howitt! Howitt!—An encouraging cry.

Imping.—Mending broken feathers.

Join.—When her companion in the flight comes up.

Jowks.—Sleeps. "She joykith when she slepith."

Making her point.—"Throwing up into the air over the spot" where game hides.

Mails.—Breast feathers.

Mantle.—To stretch out the leg in a sideways and backward direction and stretch the wing over it.

Musket.—Male sparrowhawk. A sort of miniature hawk.

Mute.—To evacuate.

Nares.—Nostrils.

Pannel.—The lower intestine.

Passage-hawks.—All the big hawks that have been captured after they began to prey for themselves.

Pelt.—The dead body of any quarry.

Petty-Singles.—Toes. "Bott certaynly the clees that are uppon the medyll. Stretcheris ye shall call loong sengles . . . the longe sengles be called the key of the fote or closer."

Pitch.—The height she rises waiting for game.

Put in.—Drive the quarry to take refuge in a covert.

Put over.—"She puttithouer when she euvideth hir meete owte of hir goorge into hir bowillis."

Quarry.—The bird or beast flown at.

Rouse.—To shake herself.

Red Hawk.—One of the first year.

Sails.—The wings. "Flight feathers," the long ones. The outer are "principals."

Seeling.—Closing the eyes by a thread through each lid while training. This is now out of fashion.

Slice.—For a goshawk or sparrowhawk what mute is for others.

Sora-Aage.—"The first yere is calde hir sore-aage, and all that yere she is calde a sore hawke."

Talons.—Claws, but not of a short-winged hawk.

Tiercel.—The male of various falcons.

Train.—Her tail.

Trussing.—When she catches a bird in the air.

Warbles.—When she stretches her wings over her head.

Weathering.—Placed unhooded in the open air.

Yarak.—A state of eagerness for killing quarry.

THE LONG-BOW.

BY CHARLES E. DANA.

(Read April 3d, 1901.)

Hear what Chaucer says the bowmen looked like, for he saw the men of Cressy and of Poitiers:—

"And he was clad in coote and hood of grene.
A shef of pocok arwes* bright and kene
Under his belte he bar full thriftily.
Wel cowde he dresse his takel yomanly;
His arwes drowpud nought with fetheres lowe.
And in his hond he bar a mighty bowe
A not-heed† hadde he, with a broun visage.
Of woode-craft cowde‡ he wel al the usage.
Upon his arme he bar a gay bracer,§
And by his side a swerd and a bokeler,
And on that other side a gay daggere,
Harneysed wel, and scharp as poynt of spere;
A Cristofre|| on his brest of silver schene.
An horn he bar, the bawdrik was of grene;
A forster¶ was he sothely,** as I gesse."
—Chaucer: *Cant. Tales. Prologue, a Yeman.*

But the "mighty bowe," how did he get that? Oh, from the Romans, of course. That is a safe start to make. Still, you do meet persons who are hardy enough to deny even that, and assert that the Normans introduced the bow. You will always find that, when early English history is under discussion, if you head your opponent off from the Romans, he is sure to fall back on the Normans. But here Thomas Wright, the eminent English anti-

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*Large arrows with peacock's feathers.

†With nut-brown hair, or a round head, like a nut.

‡Knew.

§A protection for the arm, from French "bras," the arm; to save the arm and the doublet and "that the stringe, gliding sharplye and quicklye off the bracer, may make the sharper shot. A shooting glove is chiefly to save a man's fingers from hurting, that he may be able to bear the sharp string to the uttermost of his strength."—Roger Ascham (1515, *d.* 1568), Queen Elizabeth's tutor.

||A figure of St. Christopher, used as a brooch, and supposed to be a charm against danger.

¶Forester.

**Certainly.

quary, who died in 1877, comes to our aid with his *England in the Middle Ages.* He very sensibly remarks that, if the Normans had introduced the bow and arrows, the same would have been called *arcs* and *flèches.* But they are not so called, and bow comes from the old Saxon *boga* and arrow from *arewe.*

At the battle of Hastings (1066), from the purely Norman point of view of the Bayeux Tapestry, but one lonely, retiring-looking English archer is shown; while those of Normandy jostle each other all about the border of the battle scenes. Still, this does not prove as much as it seems to; for, if more of the enemy's archers had been shown, where could place have been found, on the tapestry, for the enemy's much-needed dead? The Norman bowmen are here represented as using the short-bow, and draw the arrow back to the *breast,* not to the *ear.*

William of Normandy was not as other commanders of that day; else had he lost the fight at Hastings, and stocked an extensive graveyard on English soil. He twice enticed large bodies of the English out from their lines, and then cut them to pieces; but still what was left stood, as was, and is, their custom, firm and undaunted, about the Dragon Standard, and the "Fighting Man," Harold's own device. Yet ever smaller grew the English circle. The Norman cavalry could now form and charge on the plateau, on ground that was English in the morning. William moved forward his archers, and stationed them along the slope, with orders to fire into the air, so that the arrows might drop, a deadly rain, on the little band fighting round the standards. At the same moment, he flung a great force of cavalry upon them, so that death came from above and below, and no man might defend himself from both. It was six o'clock of a short October day, and evening was upon them, when Harold, the King, was mortally wounded by an arrow that pierced his right eye, and he fell, dying at the foot of the great standard he had so gallantly defended; the only English sovereign who ever fell fighting for the fatherland against a foreign foe. Harold's two brothers and almost all his nobility lay dead about him, so that:—

"He was keeping
Royal state and semblance still."

Now was come the end, and sullenly, and slowly, the few remaining English marched out into the darkness, inflicting heavy punishment on those who dared try to stay them; while the brutal William, the Norman bastard, pitched his tent where the King had fallen, and passed the night carousing 'mid the dead. William was careful to have this spot marked, so that, when we stand by what remains of the high altar of "Battel-Abbey," we are safe in assuming that we are upon a spot than which there is none more interesting in all England.

Hastings was a victory for cavalry backed by the bow against brave, rash, but helpless, axemen with no missile weapons, and no offensive.

William himself is said to have been a skillful archer. It seems strange that, with his inordinate love of hunting, he could not reduce that Falstaff figure of his, which, later, caused his death on another scene of his brutality.

A new act opens, and Henry II comes on the stage. A great man; a troubled reign; a tragic end—but all this concerns us not. What does concern us is, that we find in this reign the first trace of the long-bow, in South Wales. Giraldus Cambrensis (1146, *d.* 1220) speaks repeatedly of the men of Gwent and Morganwg, mentioning, as proof of the strength of their shooting, that at the siege of Abergavenny Castle, 1182, the Welsh arrows pierced an oaken door four fingers thick, the steel heads being plainly visible on the inside. They were allowed to remain as a curiosity, and Giraldus himself saw them four years later. He describes these bows of Gwent as "neither made of horn, ash, nor yew, but of elm; ugly, unfinished-looking weapons, but astonishingly stiff, large, and strong, and equally capable of use for long or short shooting."

Henry's undutiful eldest son was a savage, headstrong king, but a good soldier withal, he whom we call Richard "Plantagenet"; a fine name, too, even if Richard never heard it. This Richard took to the cross-bow, a clumsy weapon, but thought so very deadly that, by a decree of the Lateran Council, 1139, its use among Christian nations was prohibited, and it could only be used against "infidels and miscreants." In other words, the cultivated and refined race that had covered Spain with universities and works of art could be shot by the cross-bow, but not the savages who joyed in turning Europe into a desert. The cross-bow might well supersede the short-bow of the early English and the Normans, but was a far inferior weapon to the long-bow; this latter having as great a range and greater penetration, besides the enormous advantage that the long-bowman discharged from twelve to twenty shots while the cross-bowman fired one. Another advantage was that the long-bow was held vertically, enabling the archers to stand in much closer formation, thereby massing their fire.

We have so few data about the short-bow that it is dangerous to be positive as to whether it was held vertically or horizontally: but there seems little doubt that the string was drawn to the chest. The advantages of the long-bow method are obvious: a much longer bow can be used when the arrow is drawn to the ear; it also allows of a longer and more powerful arrow. The strength is better applied, a heavier bow can be used, and greater penetration obtained; the archer can look along his arrow and get a much more accurate aim (*Batts. Eng. Hist.*, p. 52).

John, the disagreeable brother of Richard the Lion Hearted (*d.* 1216), was not even a soldier. His sole recommendation, apart from his furnishing Shakespeare with a plot, is that he was so bad that he brought forth the Magna Charta. His mercenary cross-bowmen will never be forgotten. One of the most forbidding of them was Fawkes de Bréauté, a captain in the band. (*Oman*, p. 558.)

Edward I was born 1239 and died 1307. He was a true leader of men, and unquestionably recognized the revolution taking place in the art of war; that is, the growing importance of infantry, and the still greater importance of the long-bow. By the "Assize of Arms" of 1252 (assize in this case means a statute or ordinance), yeomen owning land valued at more than forty and less than a hundred shillings are to report for military duty, armed with bow and arrows, with sword and dagger. Even a poor man is to bring his bow, if he has one. But, curiously enough, even then the cross-bow was considered the better weapon, for, according to the pay roll of Rhuddlan Castle, for 1281, the arbalester (cross-bowman) received 4d. and the archer but 2d. per day (*Oman*, p. 561). As that must be multiplied by fifteen to bring it up to about our values, the men were not ill-paid.

Falkirk (1298) was won, like Hastings two hundred years earlier, by a combination of archers and men-at-arms. There was demonstrated the great importance of the missile weapon, and so, from that time on, the archers became more and more the mainstay of the English army. At Falkirk the Scottish spearmen stood firm and unbroken, despite the repeated assaults of the men-at-arms; till the archers were moved forward, and, as the artillery of more modern times would have done, their fire broke up the solid formation of the spearmen, the men-at-arms dashed through the gaps, and destruction followed (George. *Batts. of Eng. Hist.*, p. 44).

Sixteen years later the battle of Bannockburn was fought; but the great Edward had gone, and a degenerate Edward reigned in his stead. Matters were now quite different and offered but a negative evidence of the importance of the long-bow. Some blundering formation, exactly what we are not likely ever to know, enabled the small force of Scottish cavalry to cut to pieces the large, but lightly armed, body of English archers. A terrible defeat followed, Edward himself narrowly escaping capture.

Before we reach the greatest days of the long-bow, it might be well to glance for a moment at the weapon itself, and how it was regarded. There is considerable diversity of opinion regarding even the length of the long-bow, though the generally-accepted dimension is from tip to tip of the bowman's fingers when his arms are spread out as wide as may be. This in a well-proportioned man would be about his height. "The best length for a bow is 5 feet 8 inches from nock to nock" (Grose, *Mil. Antiq.*, vol. ii, p. 269, note). "Gentlemen's bows are 5 feet 10 inches and 6 feet long" *(Ency. Brit., Archery)*. The power used in drawing a bow varies from 40 to 60 pounds. The "cloth-yard arrow" was 27 inches long, that being an ancient measurement; no doubt longer arrows were sometimes used. Arrows were at first made of reeds. Cornel-wood or aspen were by some considered good, but ash finally superseded all others.

A bow of yew-wood, the "double fatal yew" (*Rich. II*, iii, 2), was considered the best, and no other was used for war; but the English yew-tree, being of a very crooked nature, refuses, except in rare cases, to grow branches straight enough and long enough for English bows. It will be seen, further on, that, when the English yew did condescend to a sufficient degree of straightness, the bows were of a poor quality and cheap. By a curious chance, neither would armor be made in England, at least not such as a gentleman was proud of being killed in. Henry VIII (*d.* 1547), a strange and somewhat obstinate old gentleman, went so far as to import skilled workmen from "Almain"; and other things, too, he did, all looking to the betterment of English armor, but it availed nothing. So the ancient knight had become quite a traveler by the time his steel tailoring was completed and he fully equipped. His person was clothed in Germany, or, not better but with more style in cut and finish, in Milan. Cologne or Toledo furnished him with a sword, while little Ripon supplied his spurs—and his archers' bows were of "Spanish vghë" (yew).

Every effort was made to keep up the supply of bow staves. Yew staves six and one-half feet long or more were admitted free of duty. By a statute of 1483, all merchants shipping goods from a port whence bow staves were exported were required to send four staves for every ton of merchandise, under a penalty of 6s. 8d. for each deficiency. Richard III (*d.* 1485) ordained that for each ton of Malmsey or of Tyre wine imported into the kingdom ten good bow staves should also be brought, under penalty of 13s. 4d. for every deficient staff. Under Edward III (*d.* 1377), the price of bows was regulated by the government. A white bow was to cost 1s., a painted bow 1s. 6d; a "sheaf" (24) of sharp arrows, 1s. 2d.; of blunt arrows, 1s. In the reign of Henry IV (*d.* 1413), it was enacted that all arrowheads should be of steel and well brased, hardened at the points, and stamped with the name or mark of the maker, under penalty of fine and imprisonment, besides forfeiture of the arrows. The highest price permitted for a yew bow was 3s. 4d.; the same price was decreed by the statute of Westminster, 1482. In the reign of Edward IV (*d.* 1483), it was enacted that every Englishman, and every Irishman living with an Englishman, should have an English bow of his own height. In 1405 it was made penal to use bad materials in the manufacture of bows and arrows. Henry V (*d.* 1422) directed the sheriffs of counties to take six wing feathers from every goose for the feathering of arrows. There is a statute so late as the 8th Queen Elizabeth (1566), relating to bowyers, each of whom is always to have in his house fifty bows made of elm, wych-hazel, or ash. In the same statute, "bows meet for men's shooting, being outlandish (foreign) yew of the best sort, not over the price of 6s. 8d.; bows meet for men's shooting, of the second sort, 3s. 4d.; bows for men, of a coarser sort, called livery-bows, 2s.; bows being English yew, 2s." (Brand's *Antiquities*).

The following is the latest act for the betterment of archery (6 Henry VIII, cap. 3, about 1515; taken from ***Marksmanship Old and New, Nineteenth Century,*** 279, W. A. Baillie-Graham): "Shootynge is right littell used, but dayly minisheth, decayeth, and abateth more and more." This, as the act informs us, was brought about not only in consequence of the poorer classes of the population not having the means to buy the "longe bowes of ewe," but also because "tennyse playe, bowles, closshe (nine pins), and other unlawfull games" occupied the people to excess, and had resulted in "great impoverishment and many heinous murthers, robberies, and felonies." Formerly "great numbre and multitude of good archers have not only defended this realme against ye cruell malice and daunger of their outward enemies in time heretofore passed, . . . but have subdued and reduced divers and manye regions and countries to their obeisance to the terrible drede and fear of all straunge nations." Lack of practice had brought about a condition of things which King and Parliament evidently recognized as constituting a serious danger to the realm.

The act in question puts in force the "Statute of Winchester for Archers." It is provided that, with the exception of judges, justices of assize, men of holy orders, and barons of the chequer, "every man being the King's subject, not lame, decrepid, or maimed, nor having any other lawful or reasonable cause or impediment, beyng within the age of 60 yeres," must "use and exercise shotynge in long-bowes." He must have "a bowe and arowes redy continully in his house, to use himself and do use himself in shotinge." Fathers, governors, and rulers of such as be of tender age had to teach and bring up their charges in the knowledge of the long-bow. Every man having "a man child or men children in hys house shall provide, ordeyne, and have in his house for every man child beyng of the age of VII yeares and above, till he come to the age of XVII yeares, a bowe and ii shafts," to teach them and bring them up in shooting. And if the same young men be servants, their masters shall abate their money, that they shall pay for the same bows and arrows of their wages, and when such young men shall have come to the age of seventeen years, every one of them shall provide and have a bow and four arrows continually for himself, at his cost and charge and use, and occupy the same in shooting.

Justices of the assizes, justices of the peace, and stewards of the franchises (the territory or boundary of a special privilege or immunity), leete (an English petty criminal court for a hundred or manor), and lawday (the day for the semi-annual session of the sheriff's court) had power to inquire into the proper working of these ordinances and to exact a fine of 12d. for not being provided with the proper bows and arrows. Every maker of bows "within this realm shall be required to make for every bow of yew at least two bows of elm, or other wood of less cost." Failure to comply with this enactment was punishable by imprisonment without "bayle or mainepryse" (the receiving into friendly custody by his surety one who would otherwise be imprisoned) for eight days or more, according to the discretion of the mayors or bailiffs. Butts had to be made in every city, town or place, and the inhabitants were compelled to keep them up and to exercise with the long-bow on "holy dayes and other tymes convenient." Justices of the peace had full power to appoint bowyers within their shires, cities or boroughs to make long-bows of elm-wood to "serve the communality for due exercise of shooting," and they could compel as many of these bowyers as they thought fit to inhabit such places for this purpose.* To prevent malpractices in the importation of yew staves, it was ordered that in future they should be sold open, and not in bundles, so that the buyer should have perfect knowledge of the goodness of the same. No stranger born out of the King's "obeisaunce, not beyng denyzen," was allowed to convey bows, arrows, or shafts beyond the King's realm without the King's special license, upon forfeiture and imprisonment without "bayle or maynepriese." Likewise, no stranger could practice shooting with the long-bow without the King's consent.

The bows were straight, tapering slightly to the ends. They were rubbed with resin, wax, and tallow to enable them to resist the rain; while the more careful archer kept his bow straight. in a case of wood or leather, whenever it was not in use. Each bow was supplied with one or more good hempen or even silken strings, well waxed in the middle; or, better, whipped with fine thread like the heavy cross-bow cords. Three feathers were, and are, usual on the arrow. The points were barbed when it was desired to inflict a more serious wound, though this lessened the penetration,

> "The archer grinding his barbed arrow-head:
> Their bills and blades, some whetting are with files:
> And some their armours strongly riueted:

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*"That distant counties might be properly supplied with bows and arrows, the King claimed and exercised the prerogative of sending, if necessary, all arrow-head, bow-string, and bow makers, not being freemen of the city of London, to any part of the realm that required the services of such artificers; and neglect of an order to visit a place after the receipt of instructions to repair thereto was punishable by a fine of 40s. for every day the workman remained away" *(Brit. Ency., Archery)*.

With their barb'd arrowes the French horses payde:
And in their flankes like cruell hornets stong:
They kick and crie, of late that proudly nayde:
And from their seats their armed riders flong."
—*Rhyming Chronicle of Agincourt*, Drayton. pp. 50, 59.

The arrows were rarely carried in the classic quiver of Diana or Cupid, slung over the left shoulder. More commonly they were bound up in a "sheaf" of twenty-four, or carried in a kind of leather quiver, called an "arrow case," that was suspended from the belt; while the arrows intended for immediate use seem to have been thrust loosely into this same belt. In battle the sheaf was opened, the arrows cast upon the ground, points outward, the left foot being placed upon them. In several places it is mentioned that the archers, between hostile charges, scuttled out and collected arrows, drawing them even from the dead and dying. This seems rather unsatisfactory, and suggests that "the hail," "the rain," of arrows must have been of somewhat short duration or much tempered by economy. As far as I have been able to discover, no extra supply of arrows for the archers in line, what we should call the "firing line," was provided. If wrong in this I should be very glad to be corrected.

A word about the yew tree. It is commonly believed that this tree was planted in English churchyards to furnish wood for bows. As we have seen, the yew positively declined to be more than moderately useful in this direction; so some other reason for this frequency must be looked for. One suggestion is that they were so planted to protect the churches from storms; while their thick foliage formed a better screen than that of any other tree, the slowness of their growth made them almost useless for this purpose. Possibly the branches were used for palms on Palm Sunday, and the trees were planted to furnish such. All this and much more will be found in *Brand's Antiquities*.

As all know, the tree is called the "double fatal yew," because it furnished the deadly bow and deadlier poison. Even Virgil calls it the "baneful yew." It really is shocking, the bad name the unfortunate tree has got, no doubt quite unintentionally:—

"Liver of blaspheming Jew:
Gall of goat and slips of yew,
Silver'd in the moon's eclipse."
—*Macbeth*, iv., 1.

"With new-fall'n dew,
From the churchyard yew,
I will but 'noint,
And then I'll mount."
—*Sir William Davenant.*

Boutell says, in a note on Lacombe's work on *Arms and Armour*, p. 285: "From the days of Magna Charta, in England the communality had shown they were not to be despised, and they were not despised. With an aptitude and a love for manly exercises, the yeomanry of England were sturdy and muscular; moreover, the English yeomen were cherished and trusted by the English nobles. These were the men who enabled the Edwards and the Henrys first to dispense with foreign mercenaries in their own armies, and then to beat them when they appeared under foreign banners. It was an honour to command and even to fight side by side with such men, . . . and, above all, between themselves, the King, and his nobility there existed a cordial sympathy and a mutual confidence. 'Nothing,' says Froude (*Hist. Eng.*, vol. i, p. 60), 'proves more surely the mutual confidence which held together the government and the people than the fact that all classes were armed.' . . . In France the nobility was rampant, and arrogated to itself the profession of arms. The people, despised by the nobles, and at once trampled down and distrusted by them, were purposely made unfit to become good soldiers. Accordingly, a French writer, Brantôme (1546, *d.* 1614), speaking of the native infantry of his country, says that until the fifteenth century it was composed of the lowest and most degraded dregs of the populace. And even if, in spite of every adverse circumstance, these unfortunate men chanced to fight well, their courage and success at once aroused the jealousy of their own men-at-arms, who actually would charge and beat them down as if they were enemies. Thus, while in the one country a martial spirit was earnestly cherished, in the other it was rigorously repressed; and while the English archer had his manly qualities developed and matured, while he himself was highly esteemed, and his services suitably acknowledged, the French foot soldier was conscious that for him to possess and exhibit any true military qualities was simply to imperil his own life."

As, note *Henry V*, before Agincourt, (1415) (iv, 3):—

> "Be in their flowing cups freshly remember'd:
> This story shall the goodman teach his son;
> And Crispin Crispian shall ne'er go by,
> From this day to the ending of the world,
> But we in it shall be remembered;
> We few, we happy few, we band of brothers;
> For he, to-day, that sheds his blood with me,
> Shall be my brother; be he ne'er so vile,
> This day shall gentle his condition."

So that on their "visitations," in bygone days, the heralds looked for all those who bore arms-heraldic and could not prove their right thereto, "excepting those who fought with the King at the battle of Agincourt."

Why the English were allowed the monopoly of the long-bow is a mystery. The yeoman was, probably, more muscular than the average Frenchman, and the bow needed much strength; but this reason does not apply to the Lowland Scot, to all intents of the same race. Be the reason what it may, the English did keep the monopoly, and for more than a century were supreme on the field of battle, except when, as at Bannockburn, the archers were destroyed early in the fight, or when the archer was attacked unexpectedly on the march and was then but as ordinary lightly-armed infantry.

The exact range of the bow is difficult to give. The extreme range may have been as much as 600 yards. The effective range, 200 to 250 yards. The regular practicing distance was a "furlong," 220 yards, and the so-called "bow-shot" was 400 yards. There was also the "dropping shaft," such as the Norman archers used with such deadly effect at Hastings. By this high-trajectory method, like the course of the old-fashioned bombshell, a shaft was sent over an intervening obstacle, and dropped uncomfortably on the head of a person who had been pleased to consider himself in perfect safety.

In one of his plain-speaking sermons, Latimer (1472, *d.* 1554) censured the degeneration of his time in respect to archery. "In my time my poor father was as delighted to teach me to shoot as to learn any other thing; and so, I think, other men did their children. He taught me how to draw, how to lay my body and my bow, and not to draw with strength of arm, as other nations do, but with strength of body. I had my bow bought me according to my age and strength; as I increased in them, so my bows were made bigger and bigger, for men shall never shoot well, except they be brought up to it. It is a goodly art, a wholesome kind of exercise, and much commended as physic" *(Book of Days*, Vol. II, p. 776).

Knowing more about the archer now, let us join that wet. muddy band that is just emerging from the River Somme. August 24th, 1346. They are rather breathless; merry, too. Laughing at the disappointed French on the far shore. But it was a narrow shave; there seemed no possible escape, till that old peasant fellow was frightened, or bribed, into pointing out the lowest ford, the one at Blancheataque, and even then they had to beat off two thousand Picards, men-at-arms, besides a lot of cross-bowmen, all under Godemar de Fay. Close work it was, for the ford is only passable for a few hours each day, and the French were so near that some of the baggage has been captured. But they were unable to cross, for the tide headed them off. So on goes the little English army, on through the great forest of Cressy, the bowmen joyfully singing:—

"What of the bow?
The bow was made in England;
Of true wood, of yew wood,
The wood of English bows;
So men who are free
Love the old yew tree
And the land where the yew tree grows.

"What of the cord?
The cord was made in England;
A rough cord, a tough cord,
A cord that bowmen love;
So we'll drain our jacks
To the English flax
And the land where the hemp was wove.

"What of the shaft?
The shaft was cut in England;
A long shaft, a strong shaft,
Barbed and trim and true;
So we'll drink all together
To the gray goose feather
And the land where the gray goose flew.

"What of the men?
The men were bred in England—
The bowmen—the yeomen—
The lads of dale and fell.
Here's to you—and to you!
To the hearts that are true
And the land where the true hearts dwell."

That's the marching song of the *White Company*, and Conan Doyle has got the true ring in it. I know of no other book that takes one back to those old days as does the *White Company*.

Oh, they are a bad lot, those rollicking, reckless archers. Every soldier vice they very likely have, but every soldierly virtue as well. How much we all owe them. How much of the liberty we enjoy to-day is due to those irrepressible ones! Bad as can be, pity we have not more like them to-day.

On they go, striding through the forest, till, on the other side they emerge near a little hamlet; Cressy, the people say, is its name. In a couple of days, the world will say "Cressy," and as it said it then, it says it to-day. Edward, the King, grimly remarks that, "being now in Ponthieu, his own inheritance, he should await his enemies there, and take such fortune as God might send him."

On the edge of a shallow valley he draws up his little host; two bodies of dismounted men-at-arms form his "battle." The right is commanded by the sixteen-year-old Prince of Wales, later to be so well known, and so well dreaded, by his French foes that they will call him the "Black" Prince. On each flank a screen of archers, "en potence" somewhat refused. Between the two dismounted masses of men-at-arms projected a V-shaped salient of archers. This formation enabled the archers to cover the entire front, and in most places subjected the attack to a deadly crossfire. Back of the Prince's command was stationed the reserves, and between them and the Prince's wing stood the windmill whence King Edward watched the fight; its ruins remain there still.

August 26th, about vespers, the French van came suddenly on the English position, and, with the usual, stupid, overweening pride, determined to attack despite the orders of their King to the contrary. As to numbers, we can but vaguely guess, and are, probably, not far wrong when we say that the French outnumbered the English three to one. Six thousand Genoese cross-bowmen began the attack. For some reason, their bolts fell short and slew hardly a man. Far different was the return volley. One step forward strode the English archers, and then a perfect snowstorm of arrows poured upon the unlucky Genoese. For a moment only they endured this terrible blast, then, broken and dismayed, they reeled backward up the slope. A heavy thunder shower had passed over the battlefield just before the attack, and there is a story that the bad shooting of the Genoese was caused by their bowstrings being wetted. This is by no means well authenticated; but, as the range of the cross-bow was, at least, equal to that of the long-bow, there seems no other way of accounting for the singular failure of such a large force of picked men.

With characteristic feudal brutality, the French men-at-arms were ordered to charge and to ride down the interfering Genoese. This brought its own reward, for the Genoese, objecting to such treatment, defended themselves, and the men-at-arms were thrown into hopeless confusion, the while the cloth-yard shaft sped pitilessly till the first line of the foe lay dead or writhing on the muddy slope. The second line met with little better fate. Fifteen or more ill-directed charges were made. The battle lasted till midnight, but against those well-posted archers and steady foot it was hopeless to contend.

People are fond of saying that the Prince of Wales got his three feathers and his motto of "Ich dien" from the blind King of Bohemia, who was killed in this battle. Unfortunately for this pleasant little bit of innocent romance, the "cognizance" of the King of Bohemia was the expanded wings of a vulture, and his motto was not "Ich dien."

Poitiers, ten years later, was a harder fought field than Cressy; so that when the last attack was made by the French, the archers had exhausted their supply of arrows, and were fighting hand to hand as best they might. Fortunately for the Black Prince, the third "battle," or division, of the French, commanded by the brother of the King, the Duke of Orleans, seeing the hopeless defeat of the second line, fled from the field without striking a blow. The destruction of the first and second battles was principally due to the archers.

At Agincourt (1415), Henry V was cut off from his line of retreat by an immensely superior French army, variously estimated by the unreliable writers of the day at from three to six times the number of the English. For three hours after sunrise Henry awaited the attack; but for once the French allowed a splendid chance to make a blunder pass, and quietly held their ground. Henry had selected a strong position, half a mile of flat, open country; a forest on either side to protect his flanks. Henry's small force scantily filled the intervening space, while the masses of French were much crowded. Henry's formation was almost the same as that at Cressy; only he divided his men-at-arms into *three*, instead of *two*, divisions, so that there were two wedge-shaped salients of archers projecting in front, in addition to the flankers.

When Henry gave the order, "In the name of Almighty God and St. George, advance banners," the whole line moved forward along the sort of lane formed by the two parallel forests, till within easy bowshot of the French, and halted. Then comes that ominous pause; every bowman bares his right arm, loosens his sheaf of arrows; all are ready; one step forward; six, seven thousand bowstrings twang; the air is thick with flying shafts. Deadly they fall on the first French line, stinging to madness, forcing them to attack:—

"When from a medow by,
Like a storm, sodainely
The English archery
Stuck the French horses.

"The Spanish vghe so strong,
Arrows a cloth-yard long,
That, like to serpents stoong,
Piercing the wether;
None from his death now starts,
But playing manly parts,
And like true English harts
Stuck close together."
—*Rhyming Chronicle of Agincourt*, Drayton, p. 97.

The result was never in doubt. The English loss was thirteen men-at-arms and about a hundred others, while that of the French was frightful. I give no figures, as they are utterly unreliable.

"Time after time the English archers inflicted crushing losses on Scottish armies. Halidon Hill (1333), Nevil's Cross (1346), Homildon (1402), are the chief instances, but not the only ones, before the day of Flodden (1513), the last great victory of the bow. . . ." The battle began with an artillery duel. The English right was charged by the Scotch spearmen and broken; the white lion banner of the Howards was trampled in the dust. In the centre the fight was doubtful, but on the left nothing could withstand the hail of cloth-yard shafts that was poured upon the devoted Scots, till, after terrific slaughter, they fled in confusion. "The time for exhibiting the best side of knight errantry had come. James, with a splendid courage which has more than half redeemed his credit, refused to yield. Forming themselves into the national circle, the Scots held their ground to the last." (George, *Batts. of Eng. Hist.*, p. 126);

"But yet, though thick the shafts as snow,
Though charging knights like whirlwinds go.
Though bill-men ply the ghastly blow,
Unbroken was the ring:
The stubborn spearmen still made good
Their dark, impenetrable wood,
Each stepping where his comrade stood,
The instant that he fell.
No thought was there of dastard flight;—
Link'd in the serried phalanx tight,
Groom fought like noble, squire like knight,
As fearlessly and well;
Till utter darkness closed her wing
O'er their thin host and wounded king."
—*Marmion*, Walter Scott.

There was much division of opinion among the ancient soldiers with respect to changing the long-bow for the arquebuse, nor had the government any decided opinion on the subject, as the strongest statutes for enforcing the practice of archery were enacted after the introduction of fire arms; "and so indifferent were our rulers under Queen Mary, . . . that, in her ordonnance respecting armour and weapons, the alternative is left to the people, whether they would find a long-bow and sheaf of arrows, or a harquebuse, in every case where they were by law charged with the latter" (Grose, *Mil. Antiq.*, vol. ii, pp. 144, 145).

After this the use of the long-bow became a fashionable amusement. Elizabeth tries to hold the bow, but, with those colossal skirts of hers, how can she? Charles I sees his interest in it, and prevents the inclosure of the fields near London. That naughty son of his, and perhaps the sprightly Nell Gwynn, with other gay ladies, patronize it. Then comes Mr. Waring in 1776, who had injured his chest by too close work in his counting house, and took to the long-bow for physic. Alack a day! Alack a day! These are not

"The yeomen,
The lads of dale and fell."

Let us take one last look at the yeoman as he strides along the marshy land bordering the Somme, led by the "Lad of life, an Imp of Fame" (*Henry V*, iv, 1), to take up his position in the little forest not far from an unknown château, which he later hears is called Agincourt. His steel head-piece does not shine as bright as it will on a not far off day when he is to enter London. His white surcoat, bearing the red cross of St. George before and behind, that Richard II, or possibly his warlike father, had ordered all English soldiers to wear (this must be, I think, about the earliest attempt at uniform in England), is not so white as when he strode about the streets of Southampton. Under this surcoat he wears a shirt of mail, with short sleeves, to leave those brawny arms free for their deadly work. A leather bracer and a shooting glove on left arm and hand. From his girdle hangs his well-filled leather arrow case. The many times mended woolen hose that clothe those long, sturdy legs may be any color, the tawny soil of France predominating. Over his shoulder projects his bow, his painted bow, that is to decide the battle of the morrow, and make our archer to be still more dreaded by those steel-clad tyrants who domineered over all but their own domineering fellows. In addition he carries a long, sharp-pointed stake, that Henry made him cut in the thicket the other side of the Somme:—

"... Stakes to stick into the ground,
To guard the bow-men, and their horse to wound."

Drayton means the French horse, of course.

And so they stride past us. They have been in touch with the French all day, and they know a fight, a soldiers' ball, is soon to follow. How they shout! Despite the long day's march, some of the great, big boys are jumping, using their pointed stakes for poles. But now they form into less disorderly order, and, long after the forest—and time—have swallowed up that gallant band there flares out upon the evening air a roar from such powerful chests that even distance can hardly attune it:—

"Here's to you—and to you,
To the hearts that are true,
And the land where the true hearts dwell."

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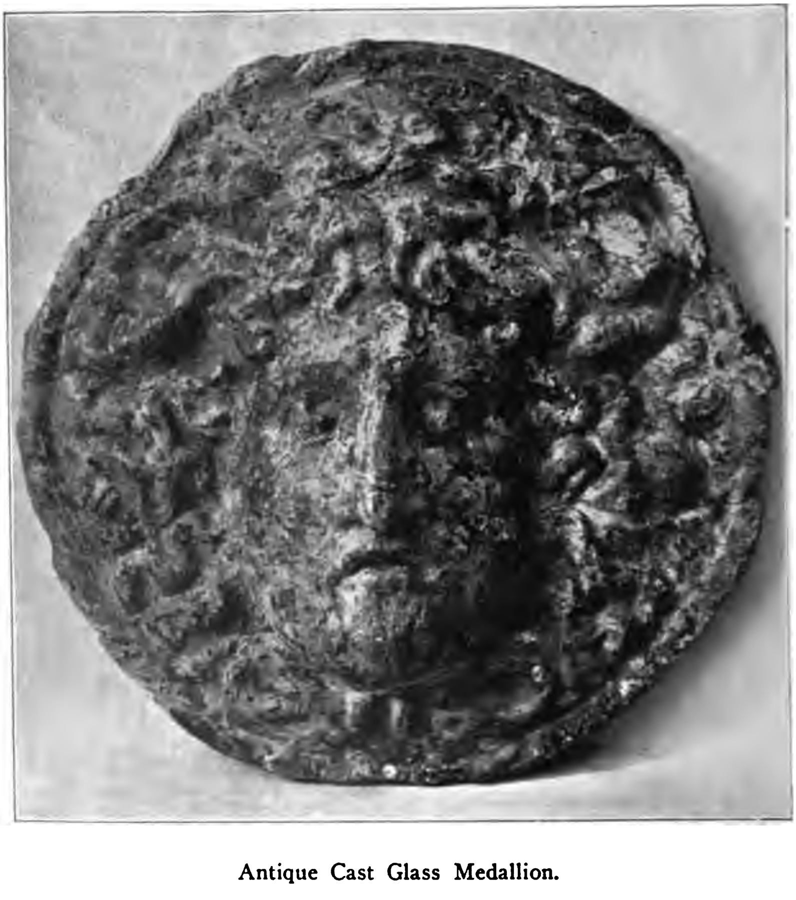

Antique Cast Glass Medallion.
Obverse: Head of Medusa.

AN ANTIQUE GLASS MEDALLION.

BY JOHN T. MORRIS.

(Exhibited April 3d, 1901.)

In a curio shop in Naples was purchased, in 1895, an antique glass medallion with the head of Medusa, discovered in Rome in 1874. It was brought to Philadelphia, where I became the possessor in 1898.

It will be noticed the face is interesting, the eyes, when properly lighted, are expressive, and the whole face is strongly modeled. The medallion measures six and one-eighth inches in diameter. The greatest thickness, at the point of the nose, measures two and five-eighths inches. A small portion of the rim, half an inch thick, is smooth, and indicates that the medallion was intended as an inserted ornament. The rest of the edge is irregular, as if the glass, when poured, had not filled the mould. The glass is, and always has been, opaque, and the brilliant iridescence of points of blue and green, and the play of color over the face leads to the question whether the iridescence comes from the natural disintegration of the glass, or from the material of which the glass is composed. A corrosion has certainly taken place to a very decided extent, as is indicated by the different layers clearly discernible, the outer crust being whitish in color, indicating a deposit; while there can be no doubt that some of the more brilliant pieces of coloring are due to the disintegration. Yet the mass of the glass seems as if it might be of inferior quality, or else made of volcanic material.

Two features of the specimen have particularly struck me. One was the smooth, polished surface of the face; the other, the wavy indentations on the reverse. These indicate that we have before us a very curious casting in glass; and the cavities and irregularities of some parts of the surface show that the casting was made in an open mould, and that the glass, whatever its nature, was peculiarly subject to contraction in cooling.

The deep cavity in the center of the reverse is directly opposite the nose. The edges of the reverse are higher than the centre, which is much hollowed, besides being irregular in thickness. The surface of the reverse once was a thin brown mud coating;

and, when this was removed in the high places, it left an opalescent color, but not so beautiful as that seen on ancient translucent glass. The smoothness of the face suggests to me that the glass was poured into a most carefully made metal mould, as otherwise the casting could not have had so fine a finished surface.

The specimen is interesting to the owner: first, for its being a casting in glass probably not less than 2,000 years old, which shows how well the ancients had mastered the difficulties of making so large a glass casting, and of producing so fine a surface as the obverse, while the reverse, by its irregularities, emphasizes the difficulties of dealing with such a stubborn material; and, secondly, for its artistic qualities.

A specimen of modern glass casting three and one-quarter inches in diameter, one inch thick, made in an open metallic mould, shows a sunken design quite low in relief. The top is slightly convex, like water in a vessel full to overflowing, the centre being higher than the edges; while the immediate centre is very slightly convex, showing contraction. But the whole surface is smooth and free from irregularities and different in every way from the antique specimen. The two, therefore, are interesting contrasting examples of antique and modern art in glass casting.

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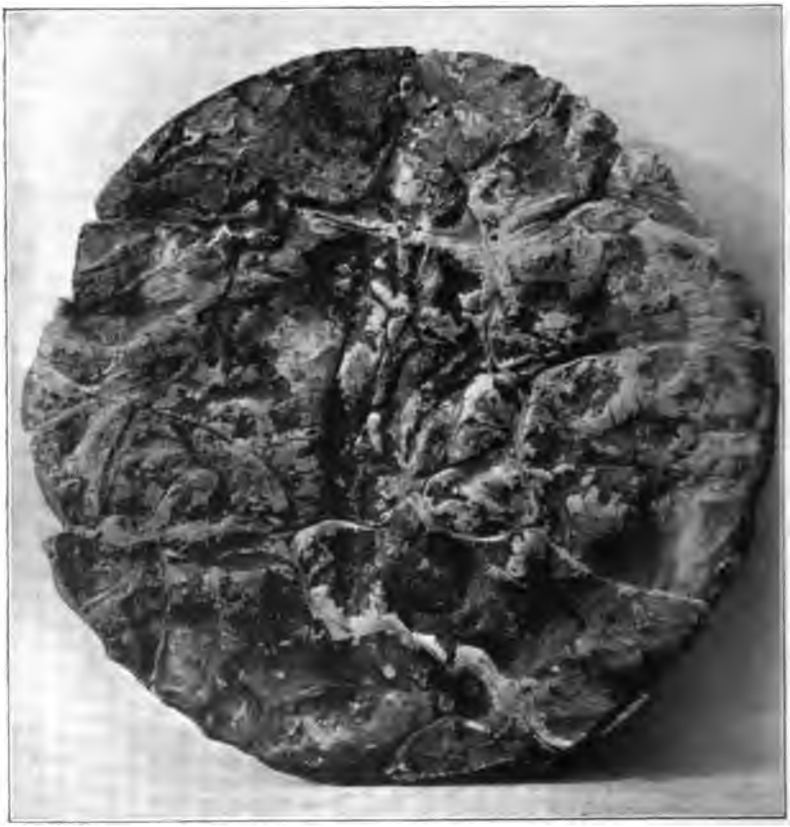


Antique Glass Medallion.
Reverse, showing Convolutions of Casting.

THE COINAGE OF THE OTTOMAN SULTANS.

BY EDWARD GILBERTSON.

(Read May 2d, 1901.)

The classification, description, and cataloguing of Ottoman coins to the end of the reign of Abdul Medjid, who died in 1861, is a sore trial to the patience and temper of the numismatist. He finds a coin of a particular denomination not only varying in size, weight, type, and fineness, and of course in value, compared with other coins of which it was a multiple or fraction, more than Turkish coins usually do, but coined at different mints, called by different names, and current at different values. And he meets with few official documents to enlighten him, and often those he does meet with only add to his difficulties; for he finds the coin itself nowise corresponding with the document. Another of his troubles is the variations in weight and fineness in coins of the same denomination and type, supposed to be identical and issued by the same Sultan. The explanation of this was given to me by Mikran Bey Dios, the master of the mint at Constantinople. He said that frequently a certain quantity of gold or silver was sent to the mint by the treasury with orders to coin it into a specified amount of coin. As the quantity of bullion was often deficient, either in weight or fineness, for the production of the sum ordered, the deficiency, if small, was made good by diminishing the weight of individual coins; if considerable, by adding alloy to make up the required weight. There was no official "toleration" for the moneyer; he made his blanks as near the required weight as he could. One also meets with another puzzle, namely, a foreign coin counterstruck by a given Sultan, but not corresponding, either in size, weight, or fineness with any known Ottoman coin. In that case, one has to guess at the coin it was supposed to represent, from the character of the die with which it is counterstruck. I have in my collection a foreign gold coin which has been hammered out to the size of a double misser, and then struck on both sides with the dies of an altun, a much smaller coin, of Selim III (1789-1807).

From a very early period foreign coins, silver coins especially, entered largely into circulation in Turkey; the favorite ones being the Austrian thaler, the Dutch rix-daler, and the Spanish pillar dollar. And this has been so persistent that, even in recent times, the Austrian mint coined Maria Theresa thalers solely for circulation in Turkey, and Spain issued colonati for the Egyptian market. Even in 1860 the Government issued a table of the prices in piastres and paras at which not only demonetized Turkish coins, but also several foreign coins, were to be received at public offices. This table gave the weight of the several coins and was as follows:—

Demonetized Turkish Coins.

		Piastres.	Paras.
Silver	djedidieh	18	8
"	old yuzluk	14	20
"	old ikilik	11	21
"	piastre of 1801	5	30
"	mejidieh	20	

Foreign Coins.

		Piastres.	Paras.
Silver	Persian sahib keran	5	16
"	Spanish colonati (double ryal)	23	17
"	French 5 francs	21	28
"	Austrian thaler (kuskly ryal)	22	20
"	old carborantz	17	17
"	new carborantz (yuzly ryal)	17	11
"	Austrian zwanziger	3	20
"	half-zwanziger	1	32
"	Greek 5 drachmas (ryal)	19	21
"	shilling	5	8

I found at Smyrna a similar tariff of fifteen gold coins, eight being demonetized Turkish coins, and twelve silver coins, ten of which were demonetized Turkish ones.

The old Ottoman coins had the field covered with inscriptions, either religious or complimentary epithets or titles referring to the Sultan, with his name and that of the mint where the coin was struck, and the year of the Sultan's accession. The Tughra or monogram of the Sultan was first used by Mohammed II (1403-21) on the obverse. It is a very vague calligraphic representation of the bloody hand of Mahmud the conqueror, which he struck on the wall of St. Sophia when he captured Constantinople, or, as others say, it was that of Murad I (1259-80). The characters which compose it are so peculiar that they are quite illegible to the uninitiated, except the names of the Sultan and of his father. It has sometimes an ornament or a word by its side; that of Mahmud II having the word "adli," the just, so that his coins (1808-40) are easily recognized, and it figures on all the modern coins of every description.

The first complication connected with the Ottoman gold coinage, which up to that time presents no difficulty, was caused by the new issue introduced by Achmet III (1750-57). The principal gold coin was the altun or sequin, weighing 53 grains; but Achmet issued a new altun weighing 40 grains, the two coins being nearly equal in size. They differed, however, in their inscriptions; the old altun bearing the phrase introduced by Murad II (1481-1512), referring to the Sultan: "Striker of the glittering (gold) and lord of might and victory by land and sea." Achmet substituted for this: "Sultan of the two lands and lord of the two seas, Sultan, son of a Sultan." The two lands were Europe and Asia Minor, the two seas the Egean and the Black Sea. Achmet called the old altun the Fundukli altun, the new one, the Zer Mahbub, and their sub-divisions by various names.

In the silver coinage confusion had already been created by the new coinage introduced by Suleiman II (1687-91). He issued the grush, or piastre, a large silver coin, the size of the Austrian thaler, which it was to supersede. It weighed 284 grains, but a thaler counterstruck by Murad II weighs 300 grains. Achmet III not only introduced a new gold coinage, but also a new silver one, with a grush or piastre of 380 grains, and its subdivisions, including the para, or fortieth part of the piastre, weighing 9 and 10 grains. After fluctuating between 300 and 245 grains, a new piastre was issued by Selim III (1789-1807), weighing 190 to 195 grains. This gradually fell in weight, until under Abdul Medjid (1840-61) it weighed only 18 grains, and was worth 2½ pence.

But the vicissitudes of the akcheh or asper are still more curious. It was, and is, the unit of value in the Ottoman currency. Orkhan (1288-1326) was the first Ottoman Sultan who coined money, and he only coined akcheh and its multiples. It was a silver coin of 19 grains weight, equal to half a silver dirhem, and sixty akcheh were equivalent to a gold altun or sequin. Its fineness was nine-tenths of pure silver; but its weight steadily diminished, and under Mohammed II (1456-81) it fell to 13 grains, under Bayazid II (1481-1512) to 12.3, and under Selim I (1512-20) to 10; at which weight Suleiman I (1520-56) issued it, as well as at 7 and 6 grains. Under Mohammed III (1595-1603) and Achmet I (1603-17), it was issued at 7, 5, and 9 grains. Finally, under Abdul Hamid (1773-80) and his successors, it descended to 2 grains and was made of base metal and as thin as paper. Still the akcheh represented the third of a para and the one hundred and twentieth of a piastre. It was probably the coin of the smallest value in Europe, worth only the twelfth of an English farthing. They were rarely found circulating, but were nevertheless money of account, and the customs duties were reckoned in aspers. At length, in 1857, when the treaty of commerce with Great Britain was discussed, the Turks were persuaded to fix the duties in piastres and paras.

But the most disastrous confusion of the currency was the work of Mahmud II (1803-40), who issued no less than twenty varieties of gold coins and nearly as many silver ones. But he reached a climax in 1829, when he coined the beshlik or 5-piastre piece and its sub-divisions. This deteriorated coinage was issued to provide the means of paying the war indemnity to Russia; and it consisted of a piece of 5 piastres, the beshlik ("besh"=5), the yuzluk, of 2½ piastres ("yuz"=100 paras), and the grush, or piastre, of 40 paras, with the yirmilik, or half-piastre ("yirmih"=20 paras, and the onparalik of 10 paras ("on"=10). The weight of the beshlik was announced as being 247 grains, and its fineness as one-fourth silver. But Mihran Bey, the master of the mint, told me that they used the Spanish dollar as fine silver, which accounts partly for the lowness of its standard. In 1833 Mahmud ceased coining beshliks, and issued the altilik currency. The altilik was a coin of the value of 6 piastres ("alti"=6), weighing 86 grains, one-half of which was pure silver. It was subdivided into the utchluk, or 3-piastre piece ("utch"=3), and the altmishlik of 1½ piastres ("altmish"=60 paras).

In 1862 the caime or paper money, first issued in 1840, was withdrawn from circulation. So reckless had been its issue that in December, 1861, 219 piastres in caime were only equal to 100 in metal. I was one of the commissioners appointed for this operation,—the only one, by the way, who had any practical knowledge of finance,—and the Ministry of Finance informed us that the total amount issued was 1,000,102,530 piastres, or about 50,008,000 dollars. But we canceled 1,001,224,810 piastres, or about 50,661,000 dollars; so that, from the large quantity that must have been destroyed during twenty years, especially in the almost daily fires occurring among the wooden houses of Constantinople, there must have been a very large sum surreptitiously issued by the various Ministers of Finance.

But the success attending this operation inspired some of the Ministers with the idea of calling in the beshlik and altilik currency, relying chiefly on the amount of silver it would yield. In spite of my declared opinion that the project was impossible in the then state of Turkish credit, I was named a member of that Commission also, and believed it to be mainly a suggestion emanating from the Greek and foreign bankers, who saw in it a most profitable operation. I represented to Fuad Pacha, the Grand Vizier, that the amount in circulation was unknown, as the mint possessed no record of its issues; but it must be very large, for it constituted the chief circulating medium of the greater part of the empire. And that amount was notoriously constantly increased by the importation of barrels full of forged coin smuggled in from abroad. The result was that the Grand Vizier limited the powers of the Commission to a study of the question and to the presentation of a report on the subject. The outcome of our investigations and of my own assays were as follows: 617,500 beshliks weighed, after melting, 34 tons, 16 hundredweight, 1 quarter, 4 pounds, 12 ounces, and yielded 192,100 ounces of silver, instead of 310,690; and 24,000 altiliks weighed 9,608 ounces when melted, giving 4,800 ounces of silver. So the operation was abandoned.

In 1844 Abdul Medjid (1840-61) resolved to issue an entirely new coinage, and to call in and demonetize all the existing coins, with the exception of the beshlik and altilik series. That new coinage is known as the Mejidieh currency, and is the one now in use. It consists of the gold mejidieh or lira of 100 piastres, with its multiples of 200 and 500 piastres, the yarim mejidieh of 50 piastres, and the tcheirek or quarter mejidieh of 25 piastres. Its standard is 917-1000 of fine gold, that of the silver coinage 830-1000 of fine silver. The silver coins are the silver mejidieh or ikilik of 20 piastres, the onlik of 10 piastres, the tcheirek of 5 piastres, and the grush or 1 piastre. In copper there are pieces of 40 paras, called the ghitmush paralik, of 20 paras, the yirmi paralik, of 10 paras, the onparalik, of 5 paras, the besh-paralik, of 1 para. These coins bear on the obverse the Tughra with a flower, beneath it the value of the coin, and the regnal year of the Sultan. On the reverse is "Whose aid (God's) be powerful," struck at Constantinople, and the year of the Sultan's accession. A great improvement added to these coins is the mention of their value on them.

But the vicissitudes of the Ottoman coinage are not yet at an end, for the Turkish Government has declared the current value of the beshliks and altiliks of Mahmud II to be only one-half of their original amount, and that the silver mejidieh shall pass for 19 piastres instead of 20. I have made no attempt to enumerate or describe the various coins issued by the Ottoman Sultans, my object being to endeavor to give some idea of their variety and complexity.

EARLIEST DATES ON COINS.

COMPILED FROM ARBUTHNOT'S MYSTERIES OF CHRONOLOGY.

BY RICHARD WISTAR DAVIDS.

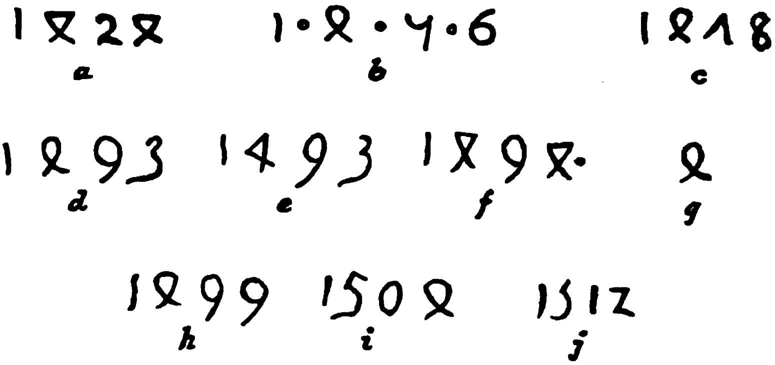
(Read May 2d, 1901.)

Date in *words* is said to appear first on Arabic coins of the 75th year of Hegira, or A. D. 694-5. There is one in gold of 77 Hegira; and in silver of 79 Hegira, both in the British Museum; others of the former year in Paris, and of the latter year at Galatz and Stockholm.

The earliest use of *Roman numerals* seems to be on a little silver coin, dated Anno Domini MCCXX . . . I of the reign of King Waldemar II (1201-1241), the only specimen ever found, and this with two or three figures missing, either worn out or erased, in Copenhagen. The earliest at Berlin is a silver groschen, with the year MCCCLXXV. In Paris there is a groschen of Aix-la-Chapelle in silver, with the date "Anno Dom. Milesimo CCCCXIX." In Berlin, a Rhenish gold gulden coined at Riel, dated MCCCCXXXVII, said to have been struck by Dietrich I, Bishop of Cologne; also an old medallion of Johann I, of Cleve, dated MCCCCXLIX, the Duke on horseback. In the Vatican Library, there are two medallions of Nicholas V, dated MCDIIIL, and another dated MCCCCLIIII; also one of Sixtus IV, dated MCCCCLXXXI. These two last were made at that time, and are evidently genuine. In Vienna there is a real thaler in silver, and one also in gold, both MCCCCLXXXVII. In the Vatican Library there is a gold piece, called "Tre Secchini" of Clement VII, dated MDXXIX, and also a demi scudo of the same Pope and date, struck at Bologna. In the British Museum the first dated English silver coin is a shilling of the year MDXLIX. In the Vatican, there is the jubilee commemorative coin of Julius III, struck at Rome MDL. Here also are two other coins not strictly dated, one of Pius II (1462), struck at Avignon with the year of his reign thus: AN. IIII, otherwise undated; and one of Sixtus IV (1475), with AN. JVBILEI, but it shows no figures.

Dating in *figures* on Arabic coins does not seem to have begun until the 614th year of the Hegira, A. D. 1217-18; of these there are specimens in the British Museum. In Paris the earliest is 650 Hegira. The first dated coin of the Turks in the British Museum is of A. H. 790, or A. D. 1388. They began to date with Arabic numerals, not appearing to use words. The next oldest date seems to be on a Swiss silver piece called a plappart (groat or one-half groat), dated 1424 (as in Fig *a*); this is in the British Museum. The same date appears on a silver groschen struck at the Abbey of St. Gall; this is now at Zurich. There is one or more of this kind and date at Winterthur, and another in a private collection.

At Vienna the earliest dated coin is a silver kreuzer of Frederick III, dated 1456 (see Fig. *b*), in Arabic numerals in the stage of transformation. Other coins of the same sort follow, of 1458, and at intervals to 1485. There are two coins of 1468 in Berlin, one a German coin of Frederick III, of Austria, the other an old Austrian coin. There is also a German kreuzer of 1471. There



Early Dates on European Coins: *a*, 1424; *b*, 1456; *c*, 1478; *d*, 1493; *e*, 1493; *f*, 1494; *g*, 4; *h*, 1499; *i*, 1504; *j*, 1512.

is an Urtug of Stockholm, minted there and now in the National Museum there, a silver coin, with the date 1478 (see Fig. *c*) very clear on one side; and "Sanctus Ericus Rex" on the other. The next coin there was dated 80, without the 14 before it; but this was said to be a practice of the period, the coin really being of the date 1480. In Vienna there is a silver thaler of Sigismund, Archduke of Tyrol, 1484; another of 1486 with the same; also one engraved "Renatus Dei gratia Dux Lotharingi, 1488." A gold coin of 1491, said to have been struck at Coblentz by John II, Archbishop of Treves, is at Berlin.

In the Zurich collection are some gold florins of Basle, dated

1493 (see Fig. *d*); also two gold florins, one of Frederick, the other of Maximilian, both of 1493; also a silver thaler of Berne, a very fine coin, struck there, dated 1493 (see Fig. *e*); and another one of the same, 1494 (see Fig. *f*). Next come three large gold coins of King John of Denmark, all dated 1496, and called Ross, or Rose, nobles, very fine specimens. The four on them is represented by Fig. *g*, supposed to represent half an eight. These coins are in Copenhagen. Returning now to Zurich, there is another thaler of Berne of 1501, and a silver dicken (one-third thaler), struck at Basle, dated 1499 (see Fig. *h*). The first piece actually struck at Zurich was dated 1504 (see Fig. *i*), a silver dicken, while the first gold coin struck there was one of the value of about ten shillings, dated 1526. Before the last should have come a silver coin struck and now at Stockholm, dated 1512 (see Fig. *j*). In Copenhagen there is a small, thin silver coin of 1513; and in Rome a double giulio, a silver piece of Leo X, dated 1515, struck at Parma; also thalers of Maximilian I, of 1518 and 1519, these in Vienna; again, in Rome two silver half-grossi of 1522 and 1523, struck at Parma during the reign of Hadrian VI. There is a gold coin, an essay, of 1532 in Paris, and a Scotch bonnet gold piece of James V, with 1539 on it, in the British Museum. It is said that moneys dated with Arabic numerals came into general circulation in France from 1549. But a French coin of Anne of Brittany, as widow of Charles VIII, or wife of Louis XII, is figured in LeBlanc, with the date 1498; and the numerals, as engraved, are quite modern.

The first English coins so dated, in London, are crowns and half-crowns of 1551, and the earliest gold, struck during the reign of Mary in 1553. After that, the dating of gold coins ceased until 1642. The general dating of all English coins was from 1662. Arabic numerals were not in common use in Rome until about 1570; but Paul IV had a dated coin of 1557. There is a "Sede Vacante" of 1559, a gold Pius IV of 1563, a jubilee coin of Gregory XIII of 1575, and his medal of 1582. These are in the Vatican. As a rule, the Popes used Roman numerals on their medallions and coins. There are others of about this date besides those just mentioned.

About 1654 there were some gold coins of Russia dated with Arabic numerals; but the introduction of such dating there appears to be later than in the rest of Europe. It was not universal there even as late as 1700 to 1721, at which time another system of dating was still in use. The Russians apparently used the ecclesiastical and civil era of Constantinople, viz., 5508 B. C., as their date of the creation of the world; and the moneys were so dated by Peter the Great with *Greek letters* up to the year 1700. From 1700 to 1721, the Christian era, expressed by Greek letters, was used. There is a coin of Novgorod marked 103 in Greek letters, said to be equivalent to 7103 from the creation of the world, or A. D. 1595. Another is marked 106 in Greek letters—7106=1598 A. D.

It appears, then, that no European moneys were dated with Arabic numerals till the fifteenth century. During the first three-quarters of that century, they seem to have been used very, very rarely; during the last part of that century, they were creeping in, but still not used to any great extent; and they were generally established in the sixteenth century.

SOME LITERARY AND ANTIQUARIAN FRAUDS.*

BY CHARLES E. DANA.

(Read December 5th, 1901.)

Fraud is an ugly word, think of it as we may, but, of a certainty, it is in its least bad meaning that we apply it to that poor, lonely piece of humanity who many think was the greatest genius of the eighteenth century; whose fate was so pathetic, so uncalled for, and who was so uselessly sacrificed to the selfish indifference of hardened brutes.

Poor Chatterton, broken hearted by failure and the ill treatment of those who took advantage of his boyish inexperience; too proud to accept food when starving, even from those sympathizing friends about him who were almost as poor as he, and who cared for and admired him. Trembling with weakness, he mounts for the last time the dingy stairs to his little attic in Brook Street, Holborn, the room he loved so well, because in it for the first time, in London, he had enjoyed the delights of solitude. Next day they found him dead, poisoned, poor boy, and he only a little over seventeen.

In all history no such other instance occurs of so young a boy with such astoundingly precocious genius. "He could assume the style of Junius or Smollet, reproduce the satirical bitterness of Churchill, parody Macpherson's Ossian, or, in graver mood, ape the rhythmical niceties of Pope, or the polished grace of Gray and Collins. He wrote political letters, eclogues, lyrics, operas, and satires both in prose and verse. He played in all ways the versatile mocking bird" (D. Wilson, *Encyc. Brit)*. Between his eleventh and twelfth years he made a list of over seventy works read by him, chiefly on history and divinity.

Chatterton was born in Bristol in 1752. For two centuries, Chattertons, father and son, had been sextons of the church of St. Mary Redcliffe, one of the most exquisite examples of gothic

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*A slight sketch of a few well-known frauds. Authorities: *National Biographical Dictionary. British Encyclopedia. Confessions of William Henry Ireland. Auld Lang Syne*, by Max Müller. *Le Truquage*, per Paul Eudel. Louvre *Catalogue*. The writer's note book, etc.

in England, till the family felt that they had vested rights in the stately pile. Up over the porch on the north side of the nave was the muniment room, filled with old oaken chests, in which were parchments, long forgotten and neglected, almost hidden in dust; one was called "Canynge's coffer." Chatterton's father, the pedagogue, dead before the son was born, had found the old deeds very convenient for copy-book covers; Chatterton's mother made her patterns from them; while he learned his first letters from the illuminated letters of an old French musical folio, and turned to account deeds of the Henrys and Edwards for his primers. One can hardly wonder that he was a lonely child with such surroundings, yielding to fits of abstraction that lasted for hours; yet all bear testimony to his lovableness.

In his school years, his holidays were spent at his mother's house, and much of his time alone, in a lumber room in the attic which he called his study. Though only fifteen, he had already conceived the romance of an imaginary monk of the fifteenth century; and he lived for the most part in an ideal world of his own, back in the far-off past, when Edward IV was England's king, and Master William Canynge—familiar to him among the recumbent effigies in Redcliffe Church—lived and sat in Bristol's civic chair. *The Storie of William Canynge,* a poem of great beauty, an ingenious romance, represents the bard, endowed by Truth, a heavenly maid; and so, translated to those long past times, and that more real poetic life in which Chatterton had reveled from his own childhood:—

"Straight was I carried back to times of yore,
  Whilst Canynge swathed yet in fleshly bed,
And saw all actions which had been before,
  And all the scroll of Fate unravelled;
And when the fate-marked babe acome to sight,
I saw him eager gasping after light.
In all his simple gambols and child's play,
  In every merry-making, fair, or wake,
I kenn'd a perpled light of wisdom's ray;
  He ate down learning with the wastel-cake;
As wise as any of the aldermen,
He'd wit enow to make a mayor at ten."

This picture of the childhood of the ideal patron of Thomas Rowley, the priest, in the days of Henry VI, is in reality a picture of the childhood of the poet himself.

In 1768 a very ancient bridge in Bristol was replaced by a new one. Shortly after the opening, the editor of *Felix Farley's Bristol Journal* received from an unknown subscriber, signing himself Dunelmus Bristoliensis, a "description of the mayor's first passing over the old bridge." "Chatterton was ere long recognized as its contributor; and then it was that the definite story made its appearance—over which antiquaries and critics have wrangled for nearly a century—of numerous ancient poems and other manuscripts, taken by the elder Chatterton from a coffer in the muniment room of Redcliffe Church, and transcribed, and so rescued from oblivion by his son." Among these were "Elinoure and Juga," the "Bristowe Tragedy," "Goddwyn," the "Battle of Hastings," "Tournament," the "Parliament of Sprites," etc. Sir William Barret, F. S. A., antiquary, secured the original manuscript of the "Bridge," and it appeared in his profound and learned *History and Antiquities of the City of Bristol,* published nearly twenty years after the poet's death. "Unfortunately for" poor Chatterton, "his ingenious" frauds "had either to be acknowledged or to be sustained by the manufacture of" other "spurious antiques." The latter course he unhesitatingly selected, and such was his skill that he "found no" trouble "in gulling the most learned." Even Dean Mills, President of the Society of Antiquaries, was one of the most zealous supporters of the genuineness of Rowley, the imaginary author of the poems.

Horace Walpole was applied to by Chatterton, who sent him some of his verses. Walpole submitted them to his friends, the poets Gray and Mason, who pronounced them modern. Walpole thereupon, with characteristic selfishness, for which he has been most severely blamed, coldly refused all aid; though he recognized the extraordinary genius of the poor boy, who, friendless and alone, but confident and hopeful, went forth into the great world of London. When Fortune for a fleeting moment smiled on him, he spent his little gains in presents for his mother and his sister, promising them better things in the future;—then fickle Fortune deserted him. For a while he fought on, but soon the struggle grew too bitter for the ardent poet nature, and the waters closed over him.

The next case is also that of an extremely precocious youth; also with great talent, but distorted. Pathos is replaced by extreme impertinence, and the choice tale of gullibility of great and small, learned and foolish, smacks strongly of the absorbing pages of the Newgate Calendar. William Henry Ireland was nought but an uncommon forger; the fall from poor Chatterton to Ireland is limitless. Still it is quite possible that Chatterton counts for much in the mischievous freaks of Ireland; for he and his father visited Bristol on their way to Stratford-on-Avon, where they were going to hunt for relics of Shakespeare. Ireland the younger had long talks with Chatterton's sister, and was much interested in her accounts of her brother. He also gives a minute description of the muniment room in Redcliffe Church in his *Confessions.*

If one had not such absolute confidence in the invariable untruthfulness of young Ireland, and the easy gullibility of his father, one of the adventures that he tells of about this time in his life would render the world distinctly darker. Visiting Clopton House, near New Place, Stratford, whither his father had been told some manuscripts were removed for safety at the time of the fire in the Shakespeare mansion, he was shown by the tenant a small room then used to bring up young partridges in. The rough farmer said to Mr. Samuel Ireland: "Why, it isn't a fortnight since I destroyed several baskets full of letters and papers, . . . and as to Shakespeare, why, there were many bundles with his name wrote on them."

Ireland's first forgery was a mere amusing joke. He wished to present an old book to his father, "Mr. Ireland," as he always calls him, who was a collector as well as an author. The work was of the Elizabethan time; so he wrote a pretended letter from the author to the Queen. This letter he showed at his bookbinder's to several persons, telling them that he wrote it. Indeed, the fact was so well understood that one of the workmen told him he could give him a better ink for imitating writing of that date, and then and there he did so. Ireland used this ink for all his early frauds, and, when it was exhausted, went boldly back to the workman for some more. Now, it is quite impossible that this workman was ignorant of the Shakespeare forgeries at the time he gave Ireland the second supply, for the town was ringing with them, and all knew that the papers in question came through young Ireland.

Remember that young Ireland had not passed his eighteenth year. His next attempt was a lease between Shakespeare and John Heminge, with one Michael Fraser and Elizabeth his wife. To this he affixed the signature of Shakespeare, writing that of Fraser with his left hand, "in order the better to conceal it as being from the same pen." Ireland's description of his struggles and hairbreadth escapes with the old dried-up seals he was obliged to append to the lease is very instructive. This valuable document he presented to his much-to-be-abused father, who, in the first rush of his enthusiastic gratitude, insisted on his hopeful son's accepting the most treasured volume in his extremely well-selected library, which the son says he felt compelled to do.

Ireland was shrewd enough to know that the water-marks on modern paper would surely betray him; so he purchased, for five shillings, from a book-selling friend, the right to all the fly leaves in his old books. Certainly that fickle jade Fortune favored this clever swindler. He was even lucky enough to find some sheets with the jug on them, a well-known water-mark of Elizabethan days.

The immortal bard, as you all know, managed to dodge the religious question in his plays and poems, and we know not where he went to church—possibly he didn't go at all. Ireland determined to correct this omission of Shakespeare's and make him a respectable, God-fearing member of the Established Church. So the celebrated *Profession of Faith* appeared. Now, don't forget that we are dealing with a boy of seventeen, who had in reality very little knowledge of either Shakespeare or his time. It is the most astounding case on record of how easily we are deceived when we are very anxious to be deceived. Only a very few, including Malone, the well-known Irish critic, from the very first laughed at the idea of any of Ireland's productions being aught but impudent forgeries.

Ireland says that the composition of the *Profession*, as well as the orthography, was absolutely unstudied. As to the composition, the great Dr. Parr, after carefully studying this effort of a seventeen-year-old boy, said to him: "Sir, we have very fine passages in our church service, and our Litany abounds with beauties; but here, sir, here is a man who has distanced us all." Remember that the great Dr. Parr was one of the leading lights in the English Church, a noted scholar and critic. As to the orthography, Ireland says that he simply doubled up the words, added all the letters he could, and trusted to luck. Shakespeare had no narrow prejudices on the score of spelling, but if he could have seen himself writing, "I nowe lyve in Londonne, ande as mye soule maye . . ." etc., in his astonishment he would have purchased a copy of the *Historical English Dictionary.*

Ireland's explanation of how he came by all these invaluable documents was that he had been fortunate enough to secure a friend, a man of high rank, who, for that reason, insisted that under no circumstances whatever should his name be made known, only his initials, "M. H." Ireland had by chance found a deed which established the right of his benefactor to a large and rich estate; and the benefactor rewarded him, right royally one must admit, by turning over to him all these Shakespeare documents, found in an old muniment chest.

Mr. James Boswell, of Johnsonian fame, was one of the dupes. He examined with the utmost care all the papers. Overcome with emotion, he demanded a tumbler of hot brandy and water; which seems so to have increased his enthusiasm that, with streaming eyes, he knelt down before the sacred documents, and dramatically exclaimed: "I now kiss the invaluable relics of our bard, and thanks to God that I have lived to see them."

Many other wonderful objects of Shakespearean interest appeared, including scraps of "Hamlet," the whole of "Lear," a lock of the bard's hair enclosed in a letter to Anne Hathaway. But danger was in the air, and just then a friend of Ireland's, whose suspicions had been aroused, managed to catch him en flagrant délit; but Mr. Montague Talbot was a humorous man, so he kept his secret, and enjoyed the fun. He afterwards was well known as an actor.

The play of "Vortigern and Rowena" was the climax. This was given at Drury Lane, during Sheridan's management; but failed miserably, partly on account of inherent defects in the play itself, partly from the decidedly boisterous manner Ireland's enemies took to show their disapproval, especially when Kemble recited the line, "And when this solemn mockery is o'er." Covent Garden announced for the same night (April 2d, 1796) "The Lie of the Day." Shortly after, to shield his father from most savage attacks, Ireland was obliged to own up to the forgeries; but his *Confessions* display very little penitence and much pride in his success. And, when all's said, who can be surprised at it, unpricipled liar as he was; for there must have been a very considerable amount of satisfaction and amusement, taking in the whole literary and aristocratic world of London, from that monument of dullness, the Prince of Wales, down. His father cast him off, and died ruined in reputation four years later.

Another literary forgery where patience of the most incredible nature takes the place of the genius in the above-mentioned is referred to by Max Müller in his *Auld Lang Syne.* The author is the celebrated Simonides, who one day appeared in the Bodleian Library at Oxford with a lot of Greek manuscripts, while Max Müller was there. Unluckily for Simonides, his fame had preceded him, so the Rev. H. O. Coxe, the Librarian, was prepared for him. Simonides spoke in a mixture of ancient Greek and English, both of which he knew perfectlly. His manner was most engaging, as was that of the Librarian. They began to examine some of his Greek manuscripts. "These are of small value," Simonides said; "they are modern. What century would you assign to them?" The Librarian assigned the thirteenth century to them, and Simonides fully agreed. He then went on producing manuscript after manuscript, but claiming for none of them more than the tenth or the twelfth century. All went on most amicably until he produced some fragments of an uncial Greek manuscript. The Librarian opened his eyes wide, and, examining them very carefully, put some of them aside for further consideration. Becoming more and more confidential, Simonides at last produced a real treasure. "This," said he, "ought to repose nowhere but in the Bodleian Library. And what century would you assign to it, Mr. Librarian?" Simonides said, with a smile and a respectful bow. Mr. Coxe turned over a few pages, and, looking very grave, though never quite without his usual twinkle, "The second half of the nineteenth century, sir—and now pack up your manuscripts and apage (begone)." Simonides did as he was told, and with an injured expression walked away. He certainly was a most extraordinary man—a scholar who, if he had applied his ingenuity to editing, instead of forging, Greek manuscripts, might have held a high position.

His greatest achievement was, of course, the newly-discovered Greek text of the history of ancient Egypt, by Uranios. He knew that a man of that name had written a history of Egypt, which was lost. So he made up his mind that he would write such a history in the way that Uranios ought to have done. Simonides was deep and clever, so he chose Bunsen's *Egypt* and Lepsius's *Chronology* as authorities, and these he carefully followed. After he had finished composing his Greek text, he copied it in dark blue ink, and in ancient uncial Greek letters between the letters of a Greek manuscript of about 1200, like a palimpsest. Anybody who knows the smallness of the letters in such a manuscript can appreciate the enormous labor it must have been to insert, as it were, beneath and between the minute lines of each letter, the supposed earlier writing of Uranios, so that the blue ink should *never* encroach on the small but true Greek letters. One single mistake would have been fatal, and such is the knowledge which antiquaries now possess of the exact changes of Greek letters in every century, that here, too, one single mistake in the outline of the old uncial letters would have betrayed the forger.

When Simonides had finished his masterpiece, he boldly offered it to the highest tribunal, the Royal Berlin Academy. The best chemists of the time examined it microscopically and could find no flaw. Lepsius, the great Egyptologist, went through the whole text, and declared that the book could not be a forgery (Ah, human vanity! Ah, clever Simonides!) because no one, except Uranios, could have known the names of the ancient Egyptian kings, and the right dates of the different dynasties, which were exactly as he, Lepsius, had settled them in his book.

Great was the excitement in the camp of the Egyptologists, and, though the price asked by Simonides was shamefully extravagant, Bunsen persuaded the then King of Prussia, Frederick William IV, to pay it and secure the treasure for Berlin. Dindorf, the famous Greek scholar, had been entrusted by Simonides with the editing of the text, and he had chosen the Clarendon Press, at Oxford, to publish the work. Just then unfavorable reports of Simonides began to reach the German authorities, and, in a new examination of the manuscript, some irregularities were detected in the shape of the uncial M, and at last one place where the blue ink had run across the letters of the modern Greek text. Alas! there could be no further doubt. It was a forgery. Simonides had to refund the money, and, much against his will, retired to the cool shades of a prison, never again to appear in the libraries of Europe. A number of forgeries, however, exist in England, in public and private collections; among them portraits of the Virgin Mary and some of the Apostles, painted by St. Luke; a copy of Homer with a dedication by Pericles to the tyrant of Syracuse, other Greek manuscripts on human skin, etc. His manuscript of Uranios was such a masterpiece that he was offered £100 for it, but declined. Where it now is, nobody knows.

Some years afterwards, another forger, of the name of Shapira, offered to the British Museum some scrolls of parchment containing the text of the Pentateuch, in Moses' own handwriting. They, too, were very carefully criticised, and were exhibited for some time in the Museum; nay, a commission was appointed to report on the manuscript, for which, very naturally, an enormous sum was demanded. It was perfectly well known, of course, among Semitic scholars, that writing for literary purposes was unknown at the time of Moses, and that the very alphabet used by the forger belonged to a much later period. Poor Shapira, whose name had already become notorious as connected with the spurious Moabite antiquities, which he had sold at Berlin, professed to be so dejected, when the fraud was discovered, a fraud, he stated, not committed by him, but practiced on him by some Arabs, that he went to Belgium, and there, according to the newspapers, committed suicide. But some of his victims, heartless folk, maintain to this day that these newspaper articles were also forgeries, and that he returned to the world, but not as Shapira.

There existed in Paris, not so many years ago,—and it is quite possible that he is there yet,—I think, at the Library of the Arsenal, a well-known expert, a sort of autocrat of autographs, or rather a pope, for his judgments were infallible and final; and woe, woe to the dishonest manuscript which appeared before Etienne Charavay. For he discusses not, neither does he hesitate, and from his judgment there is no appeal. First he studies the general aspect of the signature or manuscript till its style and character is thoroughly understood. Then he ransacks it, to see if perchance there be the slightest signs of trembling or hesitation caused by fear or remorse on the part of the forger. If so far all is satisfactory, he compares the piece on trial with a letter by the same hand, of undoubted authenticity. After that, he studies the general style, the ordinary mode of expression, and the orthography of the writer. When once his opinion is formed, if adverse, no word speaks he, but he takes a stamp, with indelible ink upon it, and in an instant across your treasure are the words, "Pièce fausse. E. C.," so that it goes forth to the world branded forever, like the ancient galley slave. Then, with a bland smile, he hands it back to you, cheerily informing you that it is all right now, no one can be deceived, "no charge, good day."

The great savant, M. Michel Chasles, alas for him! did not go to Charavay, but nevertheless the latter wrote a very amusing brochure, taken from the *Gazette des Tribunaux*, about Chasles.

Chasles was the then greatest living geometrician, Member of the Institute in 1851, while many other things formed a little abbreviated chapter of honors after his name. He was related to Philarète Chasles, for so long a well-known writer on the *Débats*, and came into the world that fateful year 1793, when so many of his aristocratic countrymen were hurriedly and abbreviatedly going out. Chasles, like many others, was not satisfied with all this legitimate and geometrical glory; he was determined to cap the vast pyramid of his country's greatness by adding to it the one thing in the world, good, bad, or indifferent, not invented, found, discovered, or stolen by a Frenchman: *the laws of the attraction of gravitation.* That arch deceiver, Sir Isaac Newton, had piratically seized all the credit of these laws, and not an apple could fall without being indebted to Sir Isaac that it did not fall up instead of down. Now, this was very disturbing to geometrical Chasles, for he perfectly well knew that every bit of that same credit of right belonged to Blaise Pascal. Thiers, Elie de Beaumont, and many others were equally keen to strip the attraction of gravitation from poor old departed Sir Isaac.

They did not, however, make much progress till, one never-to-be-forgotten day, when, beaming with triumph, Chasles brought to the Academy several letters, part of a correspondence between Sir Isaac and Pascal, which proved beyond peradventure that Sir Isaac, learned as he was, looked upon Blaise Pascal as his master. In one of these letters Pascal calls Sir Isaac's attention to the curious attraction the side of a cup has for the foam floating on coffee. The letters were dated 1654. The loud shouts of triumph from the French Academy was heard even in perfidious Albion. Results proved that this was a pity, for they were heard by a biographer of Sir Isaac's. The Englishman said little, but, like the modern bullet, that little carried far. He suggested that there were two things in the letters that were most suspicious. First, that Sir Isaac was born in 1642; he was, therefore, twelve years old, and at school at Grantham, when these erudite, savant-like letters were written. The second point was that coffee was first introduced into France in the year 1669, just seven years after Pascal's death, by Soliman Aga, Turkish Ambassador to Louis XIV. A French expert proved that the handwriting was not that of Pascal, the style was totally different, and that the contents were cribbed from well-known works of modern days. In spite of all, Chasles refused to betray his betrayer until forced to do so.

On the 16th of February, 1869, Vrin Lucas, the forger, appeared before the Tribunal Correctionel, presided over by M. Brunet. There it transpired that Vrin Lucas had told Chasles *(don't forget that Chasles was one of the most distinguished savants of his age),* that the letters he, Vrin Lucas, brought him were found in a loft near Versailles, that they formed part of the archives of the Comte de Boisjourdain, and included the autograph collection of the unfortunate Louis XVI. Picture the scene in court, the roars of laughter of an audience composed of the *élite* of Paris, when there were read aloud the following: Seven letters from Alexander the Great to Aristotle, written in seventeenth century French. One from Cleopatra to Julius Cæsar, in French of the same period, but negro dialect, stating that she soon expected to send their son Cæsarion to Marseilles to study commerce. One from Judas Iscariot to Mary Magdalene, containing the most sincere expressions of regret for his past conduct. From Lazarus, after his resurrection, to St. Peter. From Mary Magdalene to her dearly beloved brother Lazarus. From Pontius Pilate to the Emperor Tiberius, expressing his heartfelt sorrow at the part he had played in a certain great tragedy. A pass for a despatch bearer to Julius Cæsar, signed by the Gallic hero Vercingetorix. A challenge from the same gentleman to Julius Cæsar. Five letters from Alcibiades to Pericles. Three Orders of the day by Clovis. Two original songs by Blanche de Castille. One hundred and ninety-seven letters from Charlemagne, in some of which his name was signed Carolo Magno, a solecism one would think a school boy might detect. A bundle of letters from Molière. The National Library of France cherishes one single receipt with the great author and actor's name upon it. From Shakespeare—far outdistancing Ireland. From Rabelais, La Bruyère, Montesquieu, Rotrou—of whom not a scrap remains. From Marie de Médicis, making all right for Galileo with the Pope and the Inquisition; and many other equally lavishly promiscuous souvenirs of the past. In all 27,000 pieces, out of which a scant 100 were genuine.

Chasles had been steadily duped during eight years, had paid out frs. 140,000 ($28,000), and had loaned several thousand francs in money, as well as a number of precious books and manuscripts, to Vrin Lucas; none of which, needless to say, were ever returned. Vrin Lucas's defence was: "If I have used a stratagem in order to strike the attention and pique the curiosity, it was that I might bring back to memory historic facts forgotten and even unknown by most savants. I instructed and amused, I acted, in sum, if not with wisdom, at least with rectitude and patriotism."

The comedy had given so much pleasure to the audience that the upright and highly amused judge sentenced Vrin Lucas to only $100 fine, two years in prison, and costs.

He was no sooner out than he found a rich old priest who wanted some genealogical information. Vrin Lucas, curiously enough, knew just the manuscript that would fill that hiatus. Unluckily it was in a large public library and could not be had except at a very high price. "No matter," cried the old priest; "I give you carte blanche." He got his manuscript, it filled the gap to overflowing, but Vrin Lucas was again convicted, and revisited the familiar prison shades.

In a reliable memoir of one of England's most famous antiquaries and most lovable gentlemen is the account of how our antiquary found at Cobham a strange memorial of some by-gone age, a stone bearing the inscription "BILST UM PSHI SM ARK" plainly legible, but to this day untranslated. A rival antiquary, Blotton by name, devoured by jealousy, declared that he had found the person who carved this weird relic of a remote antiquity, that the person's name was Stumps, William Stumps; the first name contracted to Bill, a habit not unfrequent in certain circles of society, while the orthography Bil, though rare, was yet not unknown in the wilder districts of England; the whole inscription reading: "Bil Stumps, his mark." But the author of the memoir I am quoting says: "Seventeen learned societies unanimously voted the presumptuous Blotton an ignorant meddler. . . . And to this day the stone remains, an illegible monument of Mr. Pickwick's greatness, and a lasting trophy to the littleness of his enemies."*

A French authority gives a somewhat similar case. A curious little vase, on which were four capital letters, "M. J. D. D.," was submitted to a member of the Académie des Inscriptions, of Paris. The expert gave this treasure a careful and a thorough examination; then, with the unerring instinct of one long practiced in such investigations and in classic lore, pronounced the jar unquestionably Roman, and the meaning of the inscription, "Magno Jovi deorum deo" (To the great Jove, the God of Gods). The owner thanked the savant, and told him that what he heard confirmed his suspicions; he had always felt that the inscription might be misunderstood. It was intended to read "Moutarde Jaune de Dijon," as the little pots were made to hold that delicious condiment.

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* *Pickwick Papers.*

I was once quite intimate with some very agreeable and ingenious young gentlemen who had retired, temporarily, to a pleasant and salubrious prison in the Château of Estavayer, on the borders of the classic lake of Neuchatel. As this statement sounds somewhat compromising, I had better explain how my intimacy came about. I was painting at Estavayer, and, as all know who have painted at Estavayer, the Château is delightful; so I hied me to its hospitable court, or rather just outside of it. The crowd of boys, this time rather large ones, which springs up out of the ground, or forms in the air, about an artist, immediately gathered. I did not interest them much after the first ten minutes, and was soon forgotten. Their conversation, however, turned on false antiquities, and interested me very much. Two ladies came out of the Château, and I divined Madame la Préfète and her daughter. I bowed, they bowed; then they came to where I was at work. The crowd immediately melted away again into earth and air. I asked madame who these mysterious beings were. "Prisoners," she said. "Prisoners," I echoed; "but have they escaped?" "Oh, no," she replied, smiling at my ignorance; "they are not obliged to stay at the château during the day, though they ought to be there to dinner, and *must* be there at night." During my talk with her and my many pleasant chats afterwards with my friends, I found that one of the favorite ways these young innocents had of turning an honest penny was to "plant," as they termed it, some retired spot with lacustrine relics, of a character which could not be even described as suspicious. Enter the antiquarian; boys show him some fine specimens they found not far off. Will they show the place to the antiquary? They will, for a consideration, and on condition that he pays them something for each object found. The operation is satisfactory to all parties. The antiquarian stocks his museum then and there; my friends are rich for the coming winter. One of my intimates, a real genius, struck higher, and made from the tops of two copper casseroles a couple of very remarkable bosses, such as the Romans loved to deck their chests with. One, with a pleasing sense of fitness, he sold to the Museum at Neuchatel; the other, with a total lack of the sense of fitness, he unloaded on the judge of the criminal court of Neuchatel. Even then all might have been well, had not my friend's brother been foolish enough to bring about these sales by a very favorable letter of introduction from the director of the Museum at Berne, which the director of that museum did not write; so my friend's brother became for an hour or so quite intimate with the judge of the criminal court of Neuchatel, and then went, much against his will, to a stately abode in Berne, where he will remain for some years in quite another status from the free and pleasant prison life of Estavayer.

But let us leave low company and penetrate into the Hôtel of the Baron Alphonse de Rothschild, at the corner of the Rue St. Florentin and the Place de la Concorde. The grand dinner the baron gave is over, the guests have finished their coffee and liqueurs, and stroll through the galleries filled with the baron's priceless collections. The baron takes the arm of the Austrian attaché, and leads him to a certain vitrine containing a magnificent enameled coffre of fourteenth century work. It's a superb piece, in some ways unique, and the baron had paid a unique price for it, *one million francs*, $200,000!

"I am surprised," remarked the baron, with a smile of triumph, "that you let your greatest treasures leave your country"; for the coffre came from the chapel in the palace of one of the greatest of the proud Austrian nobility. "We don't, baron," the attaché said in reply; when, somebody joining them, he could only add, "I'll call to-morrow and explain." The baron was rather silent for the rest of that evening, for even a Rothschild hates to lose a million. Next morning the Austrian explained that his friend, the owner of the coffre in question,—whose high-born name is suppressed,—sent the article to a jeweler in Vienna, named Werniger, as it was much in need of repair. Surreptitiously, it seems, Werniger had copied it, and the baron had the copy. The coffre had been purchased through an absolutely honest English brocanteur, who came by first train to Paris. The deception was easily proved. But Werniger, fearing that some such trouble might arrive, had secured the million in his wife's name, which no doubt was of comfort to him during his five years in an Austrian prison.

While we are with the baron, let us get him to tell us of another unpleasant experience of his that happened in 1858. M. Boissel de Montville was a profound expert, and an honest; for it paid. He constantly bought for MM. Alphonse and Gustave de Rothschild. One day he received a hurried visit from a repairer of objets d'art, named Pierrat, who lived at Boulogne-sur-Seine. Pierrat had that very day, by merest chance, heard of two brothers living in Arles, who had just inherited from an old relative a great collection of antiquities, more especially some superb fifteenth century enamels. The news had not yet leaked out, but there was not a minute to spare, so by the first train the two were speeding towards Arles.

After arriving they had much trouble to obtain an interview with the brothers, who had no wish whatever to sell; but at last the two Parisians were allowed to see the collection, and finally the brothers parted with their treasures for the stiff price of frs. 17,000 ($3,400), though evidently much against their will.

De Montville and Pierrat got their trouvaille to the Hôtel du Forum, afraid to let it out of their hands for a moment. To those who have been unfortunate enough to have resided in the hostelry above mentioned, it is needless to say that the two did not tarry; so that within a few hours the Baron de Rothschild was the proud and happy possessor of this matchless collection. The very cases these wonderful enamels were packed in were hundreds of years old; the mouldy, rotten straw about them was itself a sufficient guarantee of their authenticity.

Connoisseurs a-many came, and admired, and envied. When young Charles Mannheim, great even then as an expert, the greatest now, stood in front of the vitrine, the baron was sure that even he would be enthusiastic; but he was not, though evidently surprised. After a long and careful examination, he turned to the expectant baron and remarked in that quiet manner of his, "Why, Baron, since when have you taken to such obviously false antiques?" "My dear Mannheim," replied the baron, with a smile of extreme certainty, "I have nothing in my whole collection so thoroughly well authenticated as those enamels." Then Mannheim began: "That salt dish in grisaille, covered so thickly with imitation dirt, to make one think it is old, has a modern top, but an ancient base. That ewer, the socle replaced by a common wooden stand, to show with what pain it has traversed the centuries, that coffret of enamel, broken and mended, lacking great pieces in places, that cup with the antique base, they are all modern, Baron, all."

Rothschild began to be very uncomfortable. "How do you account, Baron, for a piece of fifteenth century enamel having on it a design found in Herculaneum in the nineteenth century?" *That was* very awkward. "If you will allow me I will bring here a maker of just such enamels. I promise not to say one word about my purpose to him; see whether he picks out the same pieces that I have." He did select exactly the same, and he knew the man who had painted them. M. de Montville was crushed, but had to admit that Pierrat had made an easy dupe of him. He had endeavored to clean the dirt off one piece the better to examine it, but the dirt had been baked on. It turned out that Pierrat had taken the enamels to Arles on the same train he and de Montville traveled on. It was cleverly done; and he had fifteen months of somewhat enforced retirement fully to enjoy the fun of it.

The following is a monumental fraud in every sense. I have been unable to find the name of the victim; but it is not the less true on that account, so let us call him X. Now, X was a great collector of Roman, Greek, and older curiosities, of which he had many; but he had no big Egyptian statue. That was his ambition, to possess a colossus, something the Duke of A did not have, nor the Marquis of B, something even the great Louvre would envy. To one who wants and waits, things generally come—if he can pay; so, on one never-to-be-forgotten day, a well-known antiquity dealer came to X, and, after solemnly pledging him to secrecy, told him that he had just heard of a find, a glorious find, the find of the nineteenth century, a black basalt Rameses II. larger than life, and absolutely uninjured. The dealer said frankly that the difficulties in the way were almost insurmountable, but, he thought, by a plentiful use of money there was a chance of getting it out of Egypt; the danger was that the authorities there would insist on having it for Boulaq. He declared that he would not attempt to deliver it in Paris for less than frs. 100,000 ($20,000). X was rather staggered, the price was big; but the statue was bigger, and the merchant was inexorable. If X did not want it, there stood his rivals, the Duke of A and the Marquis of B, either of them ready to jump at such a rare chance. So, the matter was concluded, and it was agreed that when Rameses came into the courtyard of X's house the money was to be paid. This condition, with the enormous risks that it entailed, the merchant accepted with singular equanimity. Then followed days of agitation—of news, of rumors, of disquieting reports; for the merchant kept X fully informed as to all Rameses' movements. The long journey down the Nile; the delays at Alexandria; the fear, utterly needless, that a flash of honesty might illumine a Khedivial official and Rameses remain at Boulaq. But backsheesh, as ever, prevailed, and Rameses sailed out into a wildly stormy sea. Terrible days followed, no news except of awful gales and shipwrecks; then, triumph, joy, great Sesostris has reached Marseilles. Marseilles, however, does not seem to be aware of this astounding event. From this moment X could neither eat nor drink; till, just in time to save his life, a huge truck, drawn by six huge horses, entered the court of the hotel and Rameses had arrived.

All that night messengers scoured Paris with invitations to the Egyptologists to come and see the greatest treasure that France possessed. Early in the morning they were there, silent and awed at first in that awful presence; then they swarmed all over Rameses, like so many of his native Scarabæi. Suddenly a little, dried-up celebrity rather hesitatingly squeaked: "Tiens, this ear is not of the nineteenth dynasty." Another chimed in: "Here's the mark of a French chisel." Another, who was studying the hieroglyphs with a magnifying glass, growled: "No Egyptian ever cut these." But the awful blow was still to come. "Ha! ha!" laughed a friend; "you are trying to deceive us; this isn't basalt, it's only Angers slate." X fell prostrate over a Roman altar, made in the Boulevard de Clichy; while his triumphant foes left him, as the senators left the dead Cæsar. The Egyptian Government never claimed *that* Rameses. The statue had never sailed the Nile; alas! *as Rameses*, it had never been out of Paris.

The following occurred while I was in Paris, and shows how the biter is occasionally badly bitten, and what wonderfully fine work is required to get up a real, good, honest fraud. Such could not be, were not the condition of things so distorted; we must have an antique—the artistic value of the object is a secondary consideration. Such a state of affairs naturally leads to marvelous skill in imitation, and equal skill and study in the detection and knowledge of the style and history of the object.

M. Viel-Picard was a banker, but quite untrammeled by prejudice. He invited M. Boislève, an antiquary, to look at a table of the Regency he had, one of the very finest in Paris, suggesting that Boislève should sell it for him for frs. 30,000. Boislève called in another sharper,—I mean antiquarian,—and after a careful examination of this gem from an old château (en Espagne, probably), they sold it to a fourth sharper who rejoiced in the singularly inappropriate name of Perdreau, for frs. 30,000. Boislève kept frs. 5,000 and turned over the remainder, frs. 25,000, to the honorable banker—so, for the moment, every one was happy. But not for long. Perdreau thought he had found a lamb; to him he offered the table, but the lamb would none of it and smiled a derisive smile. He knew that "old" table. Then Perdreau discovered that he, as well as the table, had been sold; so he brought the affair before the Tribunal of Commerce, which appointed an expert named Bauer, from whose report I am quoting. After a careful examination, the expert reported that it was an unusually clever falsification. The top of the table had been veneered at the back, where the texture of the wood could be examined, with a thin slice of ancient wood that had been long exposed to the air. A curious fact pointed out by the expert was that the background of a photograph of the old table, supposed to have been taken in the ancient château where it was originally found, represented the interior of a not unfamiliar workshop in the Boulevard de Clichy. The table really was a beautiful piece of workmanship, though not what it pretended to be, and appears to have cost the honest banker frs. 12,000. Its appearance, says the expert, was sufficient to deceive the keenest connoisseur. There were some charming details amidst the profusion of sculpture. The illusion was strengthened by the scroll bearing the Richelieu arms. "The wood, although sound, looks old. The gilding, which cost frs. 3,000, represents the inimitable mellowness of age (seems to be a contradiction, that). Yet at first sight I (the expert) could see the table did not date from either Louis XIV or XV. The gilding was tarnished in too uniform a manner, and on examining it with a magnifying glass I could discover traces of the method employed." The tribunal annulled the sale and ordered the return of the frs. 30,000 paid by Perdreau, but in the suit of sharpers Nos. 2 and 3 against sharper No. 1, the honest banker, the court declared itself incompetent, as Viel-Picard was not a regular trader, this was not a regular trade dispute.

You may possibly think these are, after all, but every-day cheats, and that, if inexperienced people undertake to judge the authenticity or the merits of objects about which they are almost totally ignorant, they must expect to be taken in. But remember that in several instances the expert himself was deceived, and if your patience holds out I will give you instances where the very highest authorities were duped.

Bastiani was, or is, as he may be alive yet, for all I know to the contrary, a sculptor, born in Fiesole, overlooking Florence.

Early in life he showed a fifteenth century taste. In 1848 Freppa, a Florentine merchant, seeing his possibilities, engaged Bastiani to work for him, supplied him with a studio and models, and bought all that Bastiani produced. One of his bas-reliefs was soon sold, then sold again, and now masquerades as a gem in one of the great museums of Europe. The label on it states that it was done by Verrochio, a sculptor who once turned out an equestrian bronze of a military gentleman named Colleoni. The statue stands in front of the church of San Zanipolo, Venice, and is thought by connoisseurs to compare favorably even with some of our own magnificent City Hall monuments. In 1864 Bastiani modeled a head, which he called a portrait of the Florentine poet, Benivieni, the friend of Savonarola, sharer of the grave of Pico della Mirandola. Bastiani's model was a workman from the tobacco factory. On him he placed a cap in the style of Botticelli, as well as a good deal of fifteenth century style, marking it, in fifteenth century letters, "Hieronimus Benivienus."

Freppa gave 350 lire for this. Exit Bastiani, enter de Nolivos, grand purveyor to the Paris collectors. Will Freppa take 700 lire for the bust? He will, on condition that de Nolivos gives him 1000 lire out of the profit he is sure to make. The bust arrives in Paris, de Nolivos brushes off the dust, starts back in delight; for he then discovers that he has a real treasure, an original, not a Bastiani, a gem of the renaissance. He writes immediately to Freppa that he, Freppa, was mad to part with the bust. Freppa makes no claim to honesty, but on the receipt of this letter he dreamily wonders, what next? There is much excitement in Paris. One of the greatest of the critics writes: "We never knew Benivieni, but we will swear that this portrait is exact. Who was the author of this? One is tempted to pronounce the name of the greatest of even the marvelous sculptors of Florence."

A few months later de Nolivos sold his collection at the Drouot. The Bastiani was attributed to Lorenzo di Credi, a fellow pupil of Leonardo da Vinci. Baron Triquetti pushed the price up to frs. 13,100. Then there was a hush and it was adjudged to M. de Nieuwerkerque, for the Louvre; where, till the laughter grew too loud, it stood in the Renaissance Museum, between the Prisoner of Michael Angelo and the Nymph of the Château d'Anet, by Benvenuto Cellini. Then it moved upstairs to a somewhat sequestered nook in the Musée Sauvageot, where I suppose it still is. Bastiani swore he made it; so did Freppa. De Nolivos swore he did not—and so it remains.

Not far from this fraud malgré lui is the golden crown or tiara, an exquisite piece of goldsmith work, of King Saitapharnes, of the third century B. C. This was presented to the sovereign in question by the Greek colony of Olbia, in Sarmatia, but several unpleasantly great experts insist that it dates from the second half of the nineteenth century. The Louvre paid frs. 240,000. or some such price, for it; so, not unnaturally, turns a deaf ear to the scoffers. But the odor of fraud about that part of the Salle des Bijoux Antiques is unquestionably very strong.

At Sèvres, the greatest porcelain manufactory in the world. there is a carefully preserved collection of frauds in porcelain which have been foisted upon the factory itself. These are not only interesting, but instructive.

In Paris there is a large manufactory where the most exquisite objets d'art of every age can be bought or made to order; objects which, after having been properly doctored, defy any but the most experienced expert. Only merchants are allowed to buy there. or to enter the hallowed precincts of this temple of high fraud.

On the slopes of Montmartre, that hill with a holy summit, but a most dubious base, not long ago lived and labored, surrounded by dramatically arranged potsherds and poverty, a venerable man who was a prince of frauds. To him enter the well-known merchant Nijamar. The old man was in the last stages of despair. "Twenty times," he moaned, "have I tried to copy that rare old Rouen plaque. Decidedly they knew something then that I do not." "Your copies are too bad to deceive the dullest. I advise you to give it up and sell your originals, for, like Bernard de Pallisy, you have not another bit of furniture to burn." With tears in his bleared old eyes that venerable man consented; but he insisted on a price that made him comfortable for some time to come. Nijamar carried off his acqusitions and soon sold them to Madame Siob, a very clever merchant, with a clientèle among the rich and the great. The plaques were soon disposed of. Then vague suspicions began to float about. The Siob called in Jacquemart—you know his work on porcelain,—Gasnault, Baron Davillier, whose collection is one of the gems of the Louvre, and Level, whose superb collection is the pride of the Cluny. All pronounced the plates genuine. The sky cleared and everything was serene; when along came the simple amateur, who smiled when he saw one of the plates, and remarked that he knew where they made them. There he was again, still in the utmost despair.

the same old story, the bad copies, the splendid models. After that, there was not much doubt. The Siob got back her purchase money, but demanded frs. 1,200 for her damaged reputation.

Or you may be wandering in the picturesque wilds of Normandy, and find in a peasant's chaumière a grand old plaque of Rouen ware. It is very ancient, mended, cracked, smells of long-ago ragouts, has every mark of the real thing. Will the honest, simple peasant sell it? He does not know, it belongs to his father, who is ill in a neighboring room. It is an heirloom in their family, and he knows that venerated parent of his sets great store by this relic of the time when the family was prosperous. The simple rustic has to run in and out many times before his now weeping father will part with this cherished memento of former joys, even at the exceedingly stiff price he sticks at. But it is seldom one gets a chance like this, so the plate is carried off; and it is not till later that the amateur finds out that the "Compagnie Générale du Vieux Rouen" has "planted" that part of Normandy with these genuine antiques, products of their own factory, and that the simple, honest, Norman peasant makes a profit of 20 per cent. on all sales.

Armor of the Middle Ages is made to-day in Paris and receives its antiquity in the—horrors!—dung heap. Magnificent great specimens of the rare silverware of good Queen Anne grow up from a very small foundation of antiquity, on which is the Hall Mark, or else it grows from nothing. But, if I continue, you will think even the friends about us are something else, all confidence in human nature will be shaken, never to be recovered.

Is there any advice? Yes, but not much. Antiques are always a risk. Buy at the very best places; you will pay more, but the things will cost you less. If abroad, and you can spare the time, get initiated at the Drouot.* There you can study humanity, as nowhere else but at Monte Carlo. You will learn much, and, at times,—not often, perhaps,—pick up a good thing. But even at the Drouot stick close to the realm over which Chevalier, with the silver tongue, presides, with Mannheim for his prophet. For all about lie ravening wolves and dangerous pitfalls. In time, despite the foul air, the hard benches, the dirty crowds, the fascination will seize upon you, life will have a new charm, that of selecting objects that are just the very thing your heart has been longing for. Then comes the excitement of the sale; then, the more doubtful pleasure of seeing the fellow with a longer purse than yours go gaily off with your treasure, while you, in your bitterness and disappointment, buy something you do not want, and you wonder what in the mischief you will do with it.

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* Hôtel Drouot, the great auction rooms of Paris.

PENNSYLVANIA GERMAN STOVE PLATE.

BY HENRY C. MERCER.

(Read December 5th, 1901.)

The illustration shows a characteristic fragment of one of the massive cast-iron stoves, decorated with biblical scenes and German inscriptions, made in Pennsylvania during the middle of the eighteenth century* by colonists from Germany. Several specimens seen by the writer in the Germanic Museum at Nuremberg, with designs representing the Samaritan woman at the well and other subjects, and one complete stove still in use at the town museum at Rothenburg-on-the-Tauber, demonstrate that the American stoves made of fine rectangular flat cast-iron plates, fitted together in grooves, and lacking a door, legs, and stove pipe, were copies of original wood-burning stoves (probably the earliest cast-iron stoves known in western Europe) made at German foundries during the sixteenth century, and perhaps earlier, in the valleys of the Rhine and Neckar.

Protruding into the room warmed by them, with their open end (as the broad bevel on one side of this and many of the other specimens indicates) built into a wall through which their fuel was inserted, and back again, through which their smoke found egress, they doubtless often formed adjuncts to the open fireplace. In such cases the reference to them as *jamb stoves* by Watson in *Annals of Philadelphia* would be explained. Then hot embers shoveled into an opening back of the fire reach the iron box on the opposite side of the wall, so as to warm an inner room, while the smoke comes back into the chimney.

The writer has described a series of these plates, for a time erroneously regarded as *"firebacks"* (and sometimes used as such after the demolition of the stoves, as now at the Pennsylvania Historical Society), found by him in Bucks, Lehigh, and Montgomery Counties.† They were adorned either with floral designs, such as the tulip springing from the cross, the heart and tulip, the aureole of rays, the column and round arch, etc., or with such biblical or didactic designs as Adam and Eve, the Miracle at Cana, Cain and Abel, David and Goliath, the Marriage, the Family Quarrel, or the Dance of Death, together with quotations from Scripture and moral exhortations.

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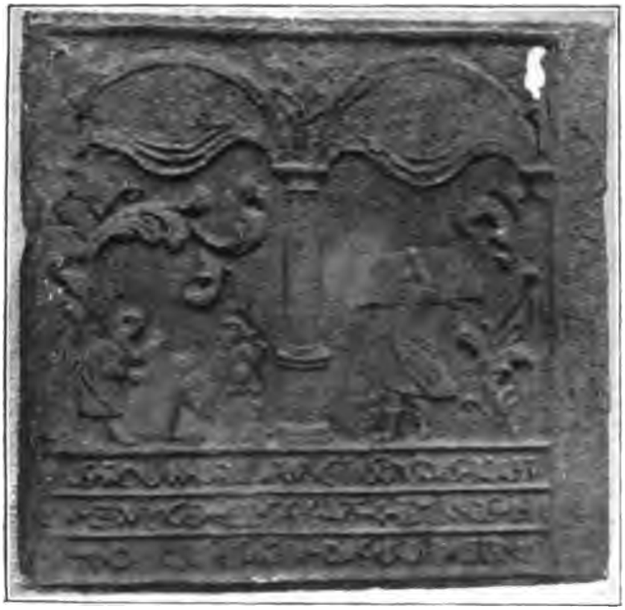
* As far as the evidence thus far shows, from about 1740 to 1765.

† *The Decorated Stove Plates of the Pennsylvania Germans*, H. C. Mercer, Doylestown, 1899.

Much decayed, two feet square, cast in open sand, and showing a broad bevel for wall insertion, this specimen now in the possession of Mr. Webster Grim, of Doylestown, and found by him, in November, 1901, at the house of Jacob F. Sassaman, in Nockamixon Township, Bucks County, Pa., shows between two pillared arches, on the one hand, Samson carrying a gate of Gaza on his shoulder, on the other, Samson lying in the lap of Delilah, while a third figure flourishes above his head a pair of scissors. Below the half-deciphered inscription, made as rudely as that previously referred to in a pamphlet upon the Dance of Death plate, and with its words separated with periods, reads: * S.PN * N.DELILA.WVST.SIMSONS.KRAFT.ZV. ZWINGEN.LIESST.AVF.IHREM.SHOS.IHN. * * M * * DAS. * * * * ("Delilah knew how to overcome Samson's strength. She let him on her lap. . . .").

Of several styles of treatment noticed by the writer in the workmanship of designs, and due, doubtless, to the varying taste and skill of several imported craftsmen, who probably made their own models, and journeyed from employer to employer between Durham, Elizabeth, Warwick and other colonial furnaces, often carrying their patterns with them, the inferior execution of this plate and the clumsy insertion of its foliate ornament class it, in the writer's opinion, with the David and Goliath plate found by Mr. H. M. Ingersoll at Penllyn and described in the pamphlet referred to above.



Pennsylvania German Stove Plate.
Sampson and Delilah.

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